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ABSTRACT

This is one of a series of units for environmental education developed by the Highline Public Schools. This unit was designed for use with fourth-grade students; it focuses on three forest biomes. Each of the biomes has characteristics of its own. The unit includes eight lessons, as well as additional activities. The unit, which incorporates interdisciplinary experiences, is designed for a minimum of two weeks instruction. While some of the activities are designed for local resources in the state of Washington, these activities could be adapted to other sites. Suggested references and films are included. The materials were tried and evaluated; evaluation data may be obtained from Highline Public Schools. (RH)

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BELL PAK

Off To The Forests

by Loretta Bell

An Environmental Learning Experience for 4th grade interdisciplinary. One of many "ELE PAKS" available for all areas.

Project ECOLogy, Title III ESEA
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CE 021 453

NATURE KNOWS BEST

PROJECT ECOLOGY TITLE III

The Kids Who Participated in the Pilot Evaluation Program

Carl Sandness	Serena Raab	Scotty Sacco
Marcia Sewell	Bruce Nelson	Sheila Cutler
Susan Smith	Chris Seiler	Kenny Smith
Brian Cabreros	Paul Parvin	Bill Walker
Marlene Hall	Devona Nelson	Toby Williams
Mark Fleugel	Lori Forbes	Richard McClean
Kenneth Cogger	Shelly Fisher	Mark Sarrett
Teresa Hill	Lora Pennington	Bill Wetzel
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The Readers Who Studied, Critiqued & Offered Suggestions & Ideas for Improvement

Don Amundson, Coordinator, Highline School District
Cathy Ross, Elementary Consultant
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Mike Thorson, Highline School District, Gregory Heights Elem.
Mrs. Matson, Lake Washington School District

The Author/Teacher Who Developed This Environmental Learning Experience (ELE)

Loretta Bell	Highline School	Maurice Bright
Crestview Elementary	Dist. #401	Principal

Evaluation Results Regarding This ELE May Be Obtained by Including This Page and a Self Addressed Stamped Envelope To

Highline Public Schools, District 401
Instructional Division
Project ECOLogy ESEA Title III
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Seattle, WA 98166

EVERYTHING IS CONNECTED TO EVERYTHING ELSE

PROJECT ECOLOGY

THERE IS NO SUCH THING AS A FREE LUNCH

PROJECT ECOLOGY TITLE III

EVERYTHING MUST GO SOME WHERE

PROJECT ECOLOGY • TITLE III

OVERVIEW OF UNIT CONCEPTS

1. An introduction of the words ECOLOGY, ENVIRONMENT, RELATIONSHIP and ECO-KIDS.

2. The characteristics of an environment determine what kinds of plants and animals will live in it.

3. Factors such as climate, altitude and soil of a region produce large world areas with distinct types of plant life, known as BIOMES.

4. The Eco-Kids visit the three types of forest biomes: the coniferous, the deciduous, and the tropical rainforest.

5. Each of the three forest biomes has characteristics of its own. Through independent study, research and reporting the students will become more familiar with these three forest biomes. They also will gain experience in sharing and working in groups.

6. Man has reduced and is continuing to reduce the size of the forest biomes. The Eco-Kids discover ways to conserve these biomes on Spaceship Earth.

7. The Eco-Kids go on a field trip to have first hand experiences with one of more of the forest biomes. They will gain skills in making and reading maps.

8. As the Eco-Kids conclude their study of Forest Biomes they will gain skills in writing, completing, summarizing and organizing their work into notebooks which they will place in the school library to be shared with other classes.

HELPFUL HINTS FOR TEACHING THIS UNIT

Environmental studies are becoming a common language in health, art, science, social studies, language arts and even math and music classes. Children who become involved with a number of experiences develop new insights and often raise new questions which lead to further studies and investigations. This is what I propose to do as I present the 8 lessons in this unit.

The focus of this unit is to interrelate the various subject areas to the principles of ecology. Whenever possible each concept has been developed into more than one discipline - art, social studies, science, language arts, which includes reading, spelling, oral language and creative writing. A few math and music activities have been included, also. There will be times when the entire day will be devoted to developing a given concept, using several disciplines for that day.

The extra activities may be helpful in keeping the accelerated learners busy and interested. The unit is designed for a minimum of 2 weeks and not more than 3 weeks. You may want to use more than one day in developing a given lesson.

Lesson 6 suggests that a forest career man be invited to visit the class. A forest ranger, a game and wildlife warden, lumberman, an employee of N. W. Pulp and Paper Co., a tree surgeon, or a National Park Department representative are some suggestions. Make contacts now and set up an appointment for the time assigned in Lesson 6. You may call the Federal Information Center, 442-0570, or if you are in the Highline School District, Seattle, WA., call Career Alternatives Model, 433-2338.

After you have secured a speaker, or speakers, have the students compile a list of questions they would like answered. Mail this list to the speaker to give him some guidelines for his presentation. Not only should he discuss what he does, but what skills and training are required to hold his job.

Lesson 7 includes a field trip to Foster's Island at the University of Washington Arboretum. A list of other areas that could be visited is included in Lesson 7. As you begin this unit of study, select a field trip and verify your date by filling out the request form for your trip. At the proper time send home the student permit slips.

Necessary materials not found in the regular classrooms are packaged into a kit. Included in the kit are master copies of the necessary work sheets and the activity job cards for the students. If you are working in the Highline School District, Seattle, Washington, all visual aids are available from the E.R.A.C. library. It would be well to order these before beginning the unit. Paperback books from the E.R.A.C. children's library are available for research reading during the study of this unit.

Have a folder for each child into which he will put his daily work, including work sheets, spelling, creative writing, daily news articles, illustrations and art work. At the close of the unit these papers will be assembled into a notebook with each child designing his own cover.

Good luck to you ECO-KIDS----------and have fun!

BACKGROUND INFORMATION

WHAT IS ECOLOGY?

Ecology is the study of all living things and the relationships between themselves and their environment.

WHAT IS ENVIRONMENT?

Environment is all of the things around a living plant or animal. Environment is all that can be seen, felt, tasted, touched and smelled.

WHAT IS MEANT BY RELATIONSHIPS?

Relationship is the interaction of all living things among themselves and their environment. Living things affect their environment and the environment affects things living in it.

WHAT IS CLIMATE?

The climate of an area is determined by its rainfall and temperature averages.

WHAT IS A BIOME?

A biome is an area controlled on land or in the water by the dominance of certain types of plants or animals. It is an area in which specific plants and animals live. It is large parts of the earth that have the same climate.

WHO ARE ECO-KIDS?

Eco-Kids are champions of what is good and clean and are friends of plants and animals. They are aware of all pollutions and are constantly battling these mysterious enemies for survival of Spaceship Earth.

WHAT ARE THE KINDS OF FOREST COMMUNITIES?

There are three types of forests: the coniferous forest, deciduous forest, and tropical rainforest, or jungle. Deciduous forests grow in areas that receive more precipitation than coniferous forests. Trees in the deciduous forest are hard wood and shed their leaves in the autumn. The coniferous forest is made up of evergreens, firs, pine and spruce which drop needles and form an acidic soil on the forest floor. The jungle receives heavy rainfall and supports a variety of plant and animal life. The plants are exotic and the flowers have gorgeous colors. Animal life is extensive.

MASTER MATERIALS LIST

Kit Materials

Copies of the following work pages from which the teacher can make work sheets for each student.

Lesson 1 - ECOLOGICAL IDEAS
Lesson 3 - BIOME RIDDLES
Lesson 4 - FOREST BIOMES
Lesson 5 - SPELLING PUZZLE
LIST OF INFORMATION NEEDED FOR REPORTS
LESSON 6 - A POLLUTED PUZZLE
RIDDLE GAME
LESSON 7 - Map of FOSTER'S ISLAND, for field trip
Pictures of typical plant vegetation of forests in the Northwest

Final Evaluation

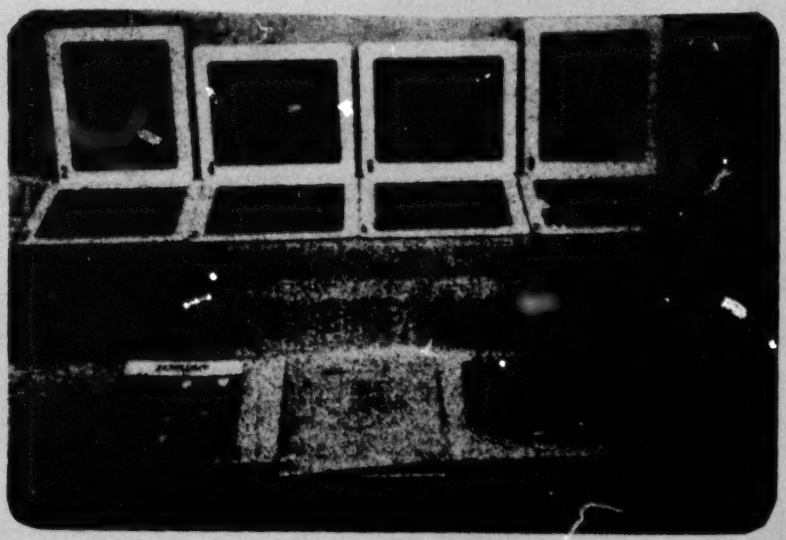
TRANSPARENCIES:
Map of world
Tundra Biome
Grassland Biome
Desert Biome
Deciduous forest Biome
Coniferous forest Biome
Tropical Rainforest Biome
Map of Foster's Island at University of Washington Arboretum

ECOLOGY, A Teacher's Guide to accompany the transparencies.
Milliken Publishing Co., 1969

A set of laminated job cards for students.

Materials to be provided by teacher and/or students:

Writing paper and pencils
Pictures of environmental misfits, prepared by teacher
Picture of lunar landscape
Overhead projector and marker
Pictures of various biomes
Kit - "Washington, its Natural Regions", available in most elementary libraries in the Highline District
Globe
Pine cone, autumn leaf, banana
Two filmstrip projectors to be used for three weeks
Picture of a deer
Books from your school library and public library on ecology, forest life and environment. (Include periodicals and encyclopedias)
Graph paper
Pictures of animals of the forests, collected by teacher and students
Musical rhythm instruments: bells, rattles, drums, rhythm sticks



Biomes – Interdisciplinary

by Loretta Bell

Photo Item	Amt	Description	Source
1	1	Deciduous Biome Transparency	MP
2	1	Tropical Rainforest Transparency	MP
3	1	Coniferous Forest Transparency	MP
4	1	Terrestrial Biome	MP
5	1	Tundra Biome Transparency	MP
6	1	Grassland Biome Transparency	MP
7	1	Desert Biome Transparency	MP
8	1	Map of Foster's Island Transparency	PE
9	1	"Ecology - A Teacher's Guide"	MP
10	1	Packet which contains pictures of biomes, tundra, grassland, desert, deciduous forest, coniferous forest, tropical rainforest	
11	1	Set of job cards	

Record: Bowmar's "Children's Rhythms in Symphony" - Cuckoo in the Deep Woods
Art supplies:
- 9"x12" drawing paper, and 9"x12" folder for each student
- crayons
- paste and scissors
- Elmer's glue
- art scrap box
- water color paints and brushes
- paper towels
- paper punch, stapler, yarn, brads
- items from nature

Request slip for field trip
Field trip permission slips for students
Collection of things originating from trees:
- paper plate, paper cup, paper towel and napkin, kleenex, large and small paper sack, wooden toy, paper dolls, book, cardboard box, picture of a Christmas tree, greeting cards, gift wrapping paper, milk carton, wooden musical rhythm instrument, etc.

Music books from your classroom
Song: Happy Wanderer, Allyn & Bacon, Grade 2, THIS IS MUSIC
Reference map of area to be visited on field trip - if other than Foster's Island
Final spelling test to be designed by teacher

VISUAL AIDS

	Films	Filmstrips
Lesson 4	HAIKU (Stanton-1969) 14 min. color	ANIMALS AND PLANTS OF THE FOREST (McGraw-1961) 38 frames
	MAKING HAIKU (ELE-1972) 8 min. color	HOW ANIMALS LIVE IN THE FOREST (Curr-1951) 27 frames
Lesson 5	DISCOVERING MUSIC OF AFRICA (FA-1967) 20 min.	
Lesson 6	WASTED WOODS (Sierra Club-1965) 15 min.	
	TREEHOUSE (King Screen-1969) 9 min.	
Lesson 7	MARSH COMMUNITY (EBE-1966) 11 min.	VISIT TO THE WOODS (EBE-1967) 33 frames
	NATURE NEXT DOOR (Sierra Club) 28 min.	

Descriptive summaries of these films and filmstrips are included in the lessons in which the visual aids are viewed.

The following suggested list of visual aids is for the student groups to use in their independent study and research, as they prepare reports for presentation to the class. You may wish to incorporate some of these into your lessons.

FILMSTRIPS:

1. AWARENESS IN FOREST & FIELD (Centron-1972) 74 frames, color
   Provides a place of adventure and discovery; helps acquaint viewers with awareness activities that can take place in the forest and field.

2. ANIMAL & PLANT COMMUNITIES: FOREST (McGraw-1961) 38 frames, color
   Shows that sound conservation practices must be based on sound ecological principles as they apply to the specific environments of the forest.

3. COLORS IN NATURE (Centron-1972) 93 frames, color
   Helps enrich the child's visual perception of color found in natural objects around him. Environmental Awareness series.

4. FOREST: A STABLE COMMUNITY (EBE-1965) 55 frames, color
   Shows that all organisms are part of interdependent living systems called communities. The material is organized so that students can discover and formulate important concepts about the nature of environments, energy relationships and adaptations in plants and animals.

5. NATIONAL PARKS OF THE PACIFIC NORTHWEST (Clover Park School-1970) 85 frames
   The four national parks of the Pacific Northwest from a visitor's standpoint--a look at what to expect at Crater Lake, Olympic, Mount Rainier and North Cascades.

6. PATTERNS IN NATURE (Centron-1972) 93 frames, color
   Provides insights as to patterns found in nature. Can be further expanded with first-hand observation in the out-of-doors. Environmental Studies series.

7. PLANTS & ANIMALS OF THE MOUNTAIN (SVE-1965) 30 frames, color
   Color photographs identify characteristics, homes and living habits of plants and animals in various sections of the U.S. Students learn about the more common plants and animals, the relationship between homes, habits and environment, and how these factors seem to interact.

8. PLANTS & ANIMALS OF THE OLYMPIC MOUNTAINS (Clover Park Media Prod-1968) 59 frames, color
   Presents representative high-country plants and animals to introduce the sub-alpine life zone.

9. RAIN FOREST (Life-1955) 76 frames, color
   Hot damp jungles which circle the earth at the equator are the oldest forest in the world. Rain-forest of Dutch Guiana.

10. RAIN FORESTS OF THE NORTHWEST COAST (Clover Park School-1971) 68 frames, Guide
    Photographs and notes introduce the rain forest of the Northwest coast, the only forest of its kind in the world.

11. TREES - THE OLDEST & LARGEST LIVING THINGS (Dowling-1952) 22 frames, b/w
Pictures famous trees, shows growth rings.

12. WASHINGTON'S RAIN FOREST (Clover Park Media Prod.-1968) 44 frames, color
Photographs and notes introduce the rain forest of northwest Washington, the only one of its kind in the world.

13. TRUE BOOK OF TREES (Children's Press-1959) 35 frames, color
The wonder, the beauty, the usefulness of our trees is shown. Recognition of trees by shape, leaves and bark.

FILMS:

1. BRAZILIAN RAIN FOREST (Hoefler-1954) 11 min., color
Water cycle in drainage basins of the Amazon and Paraguay Rivers. Animals and primitive life of Indians.

2. CONSERVING OUR ENVIRONMENT: POLLUTION CRISIS (Coronet-1972) 14 min., color
Confronts students with the overwhelming nature of the human-created pollution predicament. Also shows that there are human-made solutions. An excellent presentation of many kinds of pollution presented on a level that primary children can understand yet will hold the interest of older students, too.

3. DEER AND THE FOREST (EBE-1968) 16 min., color
Provides a common visual experience to serve as a basis for group activities; heightens pupil interest and stimulates follow-up activities; presents students with an opportunity for creative thinking.

4. LIFE ON A DEAD TREE (FA-1957) 11 min., color
Lizards, beetles, crickets, slugs, fungus plants, tree salamanders, ants, gophers, snakes, many other living things.

5. OLYMPIC RAIN FOREST (Petite-1956) 11 min., color
Story of the Pacific Northwest's Olympic Rain Forest, area of heaviest rainfall in the U.S.

6. REDWOOD TREES (Barr-1960) 15 min., color
Factual information about the Redwoods, comparing the redwoods of the Pacific Coast, the Giant Sequoias, and the Metasequoias in China.

7. ROCKY MOUNTAIN AREA - Backbone of the Nation (McGraw-1963) 16 min., color
Importance of the Rocky Mountains to the entire United States, as a principal source of water, pasture land, lumber and wood products. Spectacular views of Bryce Canyon, the Grank Canyon, Old Faithful, the mineral springs.

8. ROCKY MOUNTAINS CONTINENTAL DIVIDE (Barr-1949) 22 min., color
Location and significance of the Rocky Mountains and how they were formed and modified by the forces of nature. Plant and animal life, trees, flowers, bords and small and large mammals portrayed in their natural habitats.

9. YELLOWSTONE: OUR FIRST NATIONAL PARK (Bailey-1962) 15 min., color
   Geologic history of Yellowstone and how it became the world's first national park during the 1800's. Shows the important park features - lakes, forests, waterfalls, etc. An animated diagram aids in the explanation of geysers.

The next five films pertain to the uses of trees and to their related careers. Any or all of these films could be presented in Lesson 6.

1. DECORATIVE FOLIAGE (Moyer-1971) 20 min., color
   Identifies some of the more important floral greenery from the forests and shows how it is picked, processed, and used by the florist trade.

2. HOW TO STUDY ECOLOGY: A FIRST FILM (BFA-1972) 11 min., color
   Introduces the study of ecology to a young student. Outlines the elements with which an ecologist is concerned and suggests ways that a beginning ecologist can initiate a study of a small area in which he is interested.

3. MAKE A WISH: TREE (ABC-1972) 12 min., color
   A special interview with a forester in California. He shows the logging operation and why he finds his own kind of satisfaction in the work he does.

4. UNCLE SMILEY GOES PLANTING (LCA-1972) 16 min., color
   Uncle Smiley takes his group of young friends on a hike through the forest to plant a tree. A series of misadventures teach lessons in safety, litter, cleanup and forest fires. Humorous and very appealing to both young and old.

5. WHAT ECOLOGISTS DO (Centron-1971) 16 min., color
   Defines ecology and explains the roles of ecologists in studying the interrelationships between organisms and their environments. Questions and problems posed in the film involve the audience in the work of ecologists.

For your convenience the films used in this ELE are listed on this tear out sheet. Simply add the dates required and mail to the Instructional Material Center, ERAC.

Project ECOLogy

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LESSON 1

CONCEPT: An introduction of the words ECOLOGY, ENVIRONMENT, RELATIONSHIP and ECO-KIDS.

MATERIALS:
Chalkboard
Bulletin board to be designed for news articles
9" x 12" folders for each student
Writing paper
Copy of ECOLOGICAL IDEAS worksheet for each student

PROCEDURE: Write the word Ecology on the board.

We've been hearing much about this word lately and we are going to be studying an area of ecology in class. What does it mean to you?

Discuss their ideas of its meaning.

The word ecology comes from two Greek words: oikos, meaning house, and logos, meaning to study. Is ecology, then, a study of houses?

In a way, yes, it is, if you think of the entire earth as a sort of "house" where we all live. Ecology is a study of all living things and the relationships between themselves and their environment, or the place in which they live. We might even think of our home, the Earth, as a spaceship and refer to it as Spaceship Earth.

Write the word Environment on the board. *What does this word mean to you?* Discuss.

What is your environment? Think of all your surroundings--including other humans, animals, plants, weather, air and so on. What are your five senses? (Sight, touch, taste, smell, hearing) *Can you see your environment? Can you touch it?* (Discuss each of the senses in relation to the environment.)

Things found in the environment can be divided into "natural" and "man-made", but the source of all man-made objects is in nature. Look around your present environment. What are some natural things you see? (Possible answers: other class members, plants in terrarium, goldfish, flowers, water, air, etc.) *What are some man-made objects in your present environment?* (Possible answers: chairs, tables, classroom, clock, books, cotton shirts, etc.) *Where in nature have these items had their beginning?*

What did we say ecology is? (Write the definition on the board--Ecology is the study of all living things and the relationships between themselves and their environment.)

This word is important, Relationships. Underline it in the above definition. *Why do you think this word is important in our definition of ecology?* Discuss, then add, *all living things have an effect on each other and on their environment. And the environment has an effect on the things that live in it.*

How do animals affect each other? (help, harm, eat others)

How do animals affect their environment? (Eat it, breathe it, trample it, etc.) *How does the environment affect the things that live within it?* (Provides conditions and materials so that certain things can live in it, etc.)

Is man an animal? Do these things apply to him as well? How? Discuss.

Write the word Eco-Kids on the board.

What is this word and what special Kids would these be? Discuss. Add to their answers: *Eco-Kids are champions, or defenders of what is good and clean and are friends of plants and animals. They are aware of all pollutions and are constantly battling these mysterious enemies for the survival of Spaceship Earth. can you name some forms of pollutions that we can battle as we go to work as "Eco-Kids" in our school, our homes, and our community?* (Possible answers: air, water, noise, litter.)

During the next three weeks we will study ecology and our own environment, and through our studies will visit certain other environments. We will write stories and riddles, learn to spell new words and make up spelling games, puzzles and poems. We will read interesting stories about various kinds of environments, make pictures of plant and animal life in their environments, go on a field trip and do fun work pages.

Hand out folders, 9" x 12", made of manila or construction paper.

Each day's work papers will be put into these folders, and at the close of our study you will design a cover for your notebook. What are some things from our environment that could be used for designing the covers? (Discuss--cones, grasses, flowers, seeds, etc.)

What recycled materials might be used? Discuss.

Where could we find daily information about ecology and how man is treating his environment? (T.V., radio, Weekly Readers, newspapers, magazines.)

Let us become aware of what is happening to our Spaceship Earth and bring to school each day articles you may find at home in the daily newspapers or in your Weekly Readers. These news items will be placed in your notebooks. Some days you may find articles of very special interest. Where might these be placed so they could be shared with other class members? (Discuss the preparation of bulletin board--volunteers may design and prepare this board during free time, art or recess time.)

LANGUAGE ARTS:

Creative Writing:

What things have you seen today? Do you remember anything about them? What were their colors? Did they make any noise? How did they smell and taste? Did you see a green plant? Did you see the grass growing in the sidewalk cracks? (Answer and discuss.)

Take time now to explore your environment, and to explore use of your five senses, SEEING, FEELING, SMELLING, HEARING and TASTING. By using your senses to the fullest, you will become more aware of

both yourself and your surroundings, in other words, of your environment. What sort of things do you see as you look out the window? Take some time and don't just look---try to really SEE!

Write a list of THINGS I SEE.

Your eyes can tell you more than just which objects are present. They can show you how things are alike, different and how they are related. Now, let's investigate some of these relationships.

Are some of these things that you see alike in some way? How are they alike? For example, are they the same color? Size? Texture? Think about what they do in your environment. What is their function? (Discuss)

In what ways are the things you have listed different? Are any of these things changing in any way? If they are, how? What is causing these changes? Discuss.

Write this cinquain on the board.

walls

big small

fences stop dividers

keeps one from another

tall (1)

This poem about walls is called a cinquain (sin-kane).

From your list of THINGS I SEE, pick out your favorite thing. Use one word to name what it is--this will be the first line of the poem. Can you use two words to describe it? Second line of poem. Three words about what it is doing? Third line of poem. Four words to describe how you feel about it? Fourth line of poem. One word, which, to you, means the same as the first word? Last line of poem.

Now you write a cinquain (sin-kane) about the favorite thing which you saw from the window.

As they finish, make this suggestion, *Is there anything you saw from the window which you didn't like? What are some of the things you didn't like? Why not? Think about this and then write a cinquain about a thing you saw which you did not like. Compare it to the first cinquain you wrote.*

Tomorrow you will share the poems with the class and then place them into your folders.

(1) Adapted from a cinquain by Mary McDonals: "A Place I Like", Washington Education Association, March 1970

SOCIAL STUDIES:

There has been a flood disaster which destroyed all man-made articles in your environment. You are an ecologist assigned the task of determining the four most essential things the population will need to survive during the next week. Your area is isolated and no help from the outside world will be available during this next week. There are no stores remaining, so it will be impossible to make purchases of any kind.

After you have made your decision write a paragraph explaining why you selected these four items.

Upon completion, share with the class.

VALUATIVE CTIVITY:

Now we will have fun with a work sheet entitled ECOLOGICAL IDEAS. Complete the first four sentences by circling the best answer. Write your answers to the next four questions. If you have trouble reading any of the words I will help you.

When completed you may want to go over the papers together, and then place these work sheets into their notebooks.

UGGESTED XTRA CTIVITIES:

1. RELATIONSHIPS

   Name some living things that participate in the following relationships:

   Two living things: If one died, the other would die.

   A living thing which lives off the remains of something which was once living.

   A living organism which lives off the life system of another living thing.

   Two living things which are beneficial to each other, but not dependent on each other.

   Name each of the above relationships.

2. SURVIVAL

   Find an interesting environment outdoors. Be seated and list things in this environment that you can taste, smell, see, hear and feel. List them in their proper categories.

   Now select five things from your lists that you feel are the most important for your survival on Spaceship Earth. Write a paragraph telling why you made this choice.

3. WHAT DO I NEED?

   Find five things that you need which are manufactured from natural resources.

   Go exploring.
   Why do you really need them?
   Think about the future.
   Will you still need them?

   Write a story that will answer these questions.

Lesson 1

DATE _____ NAME _____

ECOLOGICAL IDEAS

1. Ecology is the study of

   1) how animals and plants live

   2) how plants live

   3) how plants and animals interact to live

2. One's environment includes things that are

   man-made and natural only natural only man-made

3. Eco-Kids are interested in helping save

   all pollutions Spaceship Earth our Moon

4. The environment has an effect upon

   only plants only animals all living things

List some things in your environment that make it possible for you to live in it:

_____ _____ _____ _____

_____ _____ _____ _____

How does your environment affect you?

_____

_____

_____

How do you affect your environment?

_____

_____

_____

Astronauts living in space stations must create their own environment. Tell what they need to have.

_____

_____

_____

LESSON 2

CONCEPT: The characteristics of an environment determine what kinds of plants and animals will live in it.

MATERIALS: Prepare two pictures of environmental misfits, such as:
1. Locate a polar picture and paste a palm tree onto it.
2. Place a penguin onto a picture of a jungle.

Picture of the lunar landscape with a tree and a person (not in a space suit)
Writing paper
Crayons - drawing paper
Notebooks and paste
News items brought from home by students

PROCEDURE: Pose questions to fit the pictures that you will present.

Possible pictures and questions:
Show the picture of a palm tree growing in a polar region.
Why is this a funny picture? What is wrong?
What sort of environment is found by the North Pole?
How does it affect the things that live in it? Discuss.

Show a picture of a penguin in a jungle.
What is wrong here? Why?
What sort of environment is found in the jungle?
How does it affect the things that live in it? Discuss.

The kind of environment you find in different places around the world depends partly on what? (climate) Discuss.

What does climate mean? Discuss, *The rainfall and temperature averages of an area are the main factors. Weather may vary from day to day, but climate refers to an overall yearly tendency.*

What is the climate like in our community? (Seattle - average rainfall is 34-38 inches a year; average temperatures are 59° maximum and 42° minimum.)

What sorts of plants grow in our community? What animals live here? Is the climate the same all over our state?

If you live in the State of Washington you might ask, *How is the climate different on top of Mount Rainier? What sorts of plants grow there? What animals live there? How does altitude affect climate?*

Could a monkey live in the wilderness in our state? in our community? Why do zoos sometimes have trouble keeping animals from far away places alive?

Can we grow orchids outdoors in our community? What must we do in order to grow orchids here? (Create an artificial environment for them in a greenhouse which resembles the one in which they grow naturally.)

Continue to discuss these and other situations until the students can generalize that different environments have certain types of plant and

animal species which are found there because the environment meets their needs.

LANGUAGE ARTS:

Oral:

What news items concerning pollutions did any of you bring to class today? (Share and discuss)

What other types of news articles were we going to look for? (Anything related to ecology) Share and discuss the articles. Select the most interesting ones to be put onto the bulletin board--others are pasted into their notebooks.

Creative Writing:

Yesterday you wrote poems about your favorite thing and about something you didn't like as you looked out the window at your environment. What kind of poetry did you write? (Cinquain) If not finished, take time to complete these poems.

Today you will share your poems by reading them aloud to the class. Rewrite them if you feel you could improve upon your writing and then they will be ready to place into your folders.

MATH:

From the average rainfall and average temperatures for your area the class may work with math problems in differences and averages.

EVALUATIVE ACTIVITY:

Give each student a piece of drawing paper. Ask them to make a picture of an "environmental misfit", different from what was shown to them. Beneath it list as many reasons as they can think of why this plant or animal would not live in this environment.

Show the picture of the moon with the tree and the person. Have the students write why this would be an impossible situation from an environmental standpoint.

SUGGESTED EXTRA ACTIVITIES:

1. WHO LIVES WHERE?
   Find a nest.
   Sketch it and observe it.
   Do birds use the same nest year after year?
   Do just birds make nests?

2. SILENT WORLD
   Check on this and report to the class:
   What would the world be like if there were no plants?
   No animals?

LESSON 3

CONCEPT: Factors such as climate, altitude, and soil of a region produce large world areas with distinct types of plant life, known as BIOMES.

MATERIALS:

Overhead projector and marker
Transparencies of the following: (provided in Kit)
- Map of the world, divided into terrestrial biomes by colors
- Tundra biome
- Grassland biome
- Desert biome
- Deciduous forest biome
- Coniferous forest biome
- Tropical rainforest biome

ECOLOGY, a teachers guide to accompany the transparencies, Milliken Pub. Co.
Notebooks, paste and news items
Work sheet for each student, BIOME RIDDLES
Pictures of various biomes collected by you and/or the students
8"x10" pictures of areas in Washington State found in Kit, "Washington, It's Natural Regions". This kit is available in elementary libraries.

PROCEDURE:

Show the transparency of the map of the world which depicts the terrestrial biomes in color. Refer to the booklet ECOLOGY for detailed information on the biomes. This booklet is included in the Kit.

Yesterday we talked about different kinds of environments and how they affected the kinds of plants and animals that would be found there. Today as we look at this map of the world we will discover where certain types of environments are found.

What do you know about the North and South Pole regions? What is the climate like? What lives there? What grows there?

After the class has described the area to the best of their knowledge, show the tundra biome transparency and discuss. Show the world map again the locate the polar regions.

(Continue this approach with the desert, grassland and forest biomes, showing each of these transparencies, then locating each on the world map. Stress the factor of climate--which is rainfall and temperature--on the vegetation growth of each area.)

There is a name for these world regions we have just looked at - BIOME. (write on projector) *From what we have seen so far, what do you think a biome is?*

Get as many responses as you can and you can determine how well the concept is being developed. From their responses and with their help, construct a definition somewhat like this:

> A biome is a large part of the earth that has the same kind of climate. The climate makes conditions good for certain plants to grow. These plants provide food and shelter for certain kinds of animals.

How many types of biomes are there in the world? See how many you can name.

Show pictures of different types of biomes and ask such questions as: *What biome do you think this is? What do you see in this picture that makes you think this is a _____ biome?*

How much of the world is divided into biomes? (30% of all of the land area - other 70% is water.)

Do some continents contain only one type of biome? Why?

What biome is around the area where we live? How is it different now from the way it was 300 years ago? (Man has built cities) *Is it still a forest biome here in Seattle? Are there areas where we can still see natural plants growing?* (Parks, wooded areas, trees left standing).

LANGUAGE ARTS:

Creative Writing:

Choose your favorite biome, and without telling its name, write a riddle of three or four sentences which will state interesting facts about your biome.

When the riddles are completed have them read orally and let each reader choose a class member to guess the answer.

Oral:

Continue discussing and sharing their news articles.

SOCIAL STUDIES:

During our study of ecology we are going to make a detailed study of the three forest biomes. If you were going to work with forests, what are some careers you might choose? (Forest ranger, lumberman, game and wildlife warden, tree surgeon, employee of N. W. Pulp and Paper Co., or a representative of a National Park Department).

During the last week of our studies of this unit Mr. _____, a forest ranger, will come to talk with us. What are some things we will want to know about his job? What training did he need in order to prepare himself for this work? Make a list of questions you would like to ask him.

From these questions posed by the students compile a list and mail to the speaker. This will help give him guidelines for his presentation.

ART:

Using crayons, make a picture of the biome you would like to visit on your next vacation. Write a paragraph telling why you chose this biome.

Choose the biome in which you would like to live when you are four years older than you are now. Make a picture of this biome.

Make a picture of the biome in which you would like to live and work after you become an adult.

Write a paragraph to go with each illustration--telling why you chose that biome.

Illustrate any other biomes you may like to include in your notebook.

EVALUATIVE ACTIVITY:

Distribute the work sheet entitled, "Biome Riddles."

This fun work sheet has five riddles. From each description of the environment and the inhabitants, select the biome that is being described.

SUGGESTED EXTRA ACTIVITIES

1. GO AWAY WITH YOURSELF
   Go some place in your biome where you can be completely alone. Stay 15 minutes.

   Where did you go? Why did you go there? How did you feel? Had things changed since you were last there? How had they changed?

2. I SEE!!
   Imagine that you have been blind from birth but will have sight for three days. During those days you may visit a biome of your choice. What things would you like to see in that biome and why?

3. BIOMES
   Choose one or more partners and build a biome. Be creative and use as many different materials as you possibly can.

LESSON 3

DATE _____ NAME _____

BIOME RIDDLES

Word Bank: grasslands forests desert tundra tropical rainforest

1. Huge trees flourish in the warm, wet climate. Monkeys and brightly colored birds eat the many fruits which grow freely. Dangling vines, some with beautiful flowers hang from the trees.

_____

2. The climate here has definite seasons, cold winters and hot summers. In Europe and in the United States this was the home of several early civilizations. The deer and the fox are very much at home among the trees. Man's use of the trees that grow here has reduced the size of these biomes.

_____

3. The plants grow low and out of the wind's way. The reindeer and caribou graze on lichens. The temperature is often below 0° F. Many animals have white coats which would be hard to see against the snow.

_____

4. The forest has ended and nothing but various kinds of grasses stretch ahead for miles and miles. A jack rabbit chases a gopher until he burrows into his hole. The land is flat and the climate is dry.

_____

5. A lizard scurries across the hot sand. Small shrubs and cactus plants compete for the small amount of water in the sandy soil. When rain does come, it is sudden and for only a very short time.

_____

Illustrate the biome in which you would like to be living today. Include in your picture as much of the environment as possible--the plants that grow there and any animals that may live in this biome. Write a paragraph telling why you chose this biome.

LESSON 4

CONCEPT: The Eco-Kids visit three types of forest biomes: the coniferous, the deciduous, and the tropical rainforest.

MATERIALS:
Writing paper and pencils
Overhead projector
Transparencies: map of world, coniferous, deciduous and tropical rainforest biomes
World globe
Pine cone, autumn leaf, banana
Visual Aids:
Filmstrips: ANIMALS AND PLANTS OF THE FOREST (McGraw-1961) 38 frames
HOW ANIMALS LIVE IN THE FOREST (Curr-1951) 27 frames

Films: HAIKU (Stanton-1969) 14 min., color
MAKING HAIKU (EBE-1972) 8 min., color

Secure two filmstrip projectors to set up at viewing centers. Plan to keep them for three weeks. See Master Materials list, page 3 for suggested filmstrips to be used at these centers.

Picture of a deer
News items brought from home by students
Notebook folders - paste
Drawing paper and crayons
FOREST BIOME work sheet for each student

PROCEDURE: Write ecology, environment, biome and Eco-Kids on the board as you say, *What do these words mean to you?* Review briefly.

Today we will visit the forest biomes. First you will each write what you know about plant and animal life in a forest. Tell what you have observed on your visits to a forest. Have you visited the Washington Rain Forest? You might tell, too, what uses man makes of the forest. Give the class 15 minutes or longer, depending upon the interest of the group.

Collect the stories. The teacher will read them later and lightly underline all misspelled words, making a list of these words for tomorrow's spelling lesson.

Show the transparency of the biomes of the world. *Where are the forest biomes located? Are all forests the same? How are they different?*

Show the transparency of the coniferous forest. *This is the biome of our area.* (Camp Waskowitz would be a good example, if any of the students have been there.) *What does coniferous mean?* See if anyone knows.

Hold up the pine cone. *What is this? Where does it come from? The word coniferous refers to trees that have cones on them. The coniferous forest has many trees of this type. Can you hear the word "cone" in the word coniferous?*

Show the transparency of the deciduous forest biome. *What does deciduous mean?* (Again, see if anyone knows).

Hold up an autumn leaf. *Where did this come from? What trees lose their leaves in the fall? The word deciduous means leaf-shedding and comes from a Latin word deciduous which means "to fall off." The deciduous forest has many trees which lose their leaves every fall. Do coniferous trees do this?*

Show the transparency of the tropical rainforest biome. *Why do they call this a rainforest?* (Annual rainfall averages 140 inches or more) *What does "tropical" mean?* (Characteristic of the tropics--hot and humid).

Have several students locate the Tropic of Cancer and the Tropic of Capricorn on the world globe. Have them then rotate the globe slowly and point out the area that lies between the two lines. This area is known as "the tropics". *Where is the equator?* (In the middle of the tropics). *What sort of climate would be found here?* (Warm and wet)

Hold up the banana. *Is this a tropical fruit? Where would it grow? Why would plants grow very quickly and abundantly in this biome?* Discuss.

Background information for the forest biomes:

The deciduous forests have hard wood trees such as beech, maple, oak, hickory and chestnut. These trees shed their leaves. The seasons are very definite, with cold winters and hot summers, with wet and dry periods. The deer and fox are two of the larger mammals found in this forest. Smaller mammals are the opossum, raccoon, shrew and various mice. Amphibians include the marbled salamander and the Fowler's toad, making their homes in the moist debris under rotting logs. The box turtle seeks worms, insects and berries from the forest. Birds commonly found in this forest are the cardinal, woodpecker and thrush.

The coniferous forest is the land of the evergreens, firs, pines and spruces. These trees do drop needles which form an acidic soil. The winters are harsh. The largest mammals living here are the moose, black bear and wolves. Small mammals include the wolverine, porcupine and mink. The chickadee and the crossbill are the chief birds found in this forest. The red-backed salamander is a common amphibian. The smaller plants include the bunchberry, blueberry, bedstraw and the star flower.

The tropical rainforest has more than 80 inches of rain a year, high humidity and warm temperatures. These combine to produce "jungle" growth. From an airplane, the tropical rainforest appears to be a vast, plush green carpet. From within, it is a dark area with a wide variety of exotic plants and animals. There are three major strata, or levels of jungle growth. The lower strata begins at ground level and rises to about 30 feet. The next strata is called the canopy and ranges from between 20 feet to about 120 feet above the ground. The highest strata, the emergent layer, can range from 120 feet to 160 feet above ground level. These jungles contain a wide variety of plant and animal life, each adapting to its environment, or strata.

Refer to manual, ECOLOGY, Milliken Publishing Co. for more detailed information.

Show these Filmstrips:

ANIMALS & PLANTS OF THE FOREST (McGraw-1961) 38 frames
Explains in simple terms the interdependence of animals and plants to each other and to their environment. Shows the complicated, delicately-balanced interrelated system in which whole organisms and their environment function.

HOW ANIMALS LIVE IN THE FOREST (Curr-1951) 27 frames
Adaptations for life in thick woods.

Discuss the filmstrips. Encourage students to ask questions for other class members to answer.

Explain to the class: *There are many interesting filmstrips about forest life that we won't take time to view as a whole class, but we have 2 filmstrip projectors which individuals or small groups may use each day. Whenever you have completed an assigned task you may go to one of the viewing centers and enjoy the filmstrips.* Then demonstrate the careful use and care of the projectors.

LANGUAGE ARTS:

Creative Writing:

We have written cinquains and today we are going to learn how to write another kind of poetry--the haiku, which is a Japanese form of poetry that is written about something in nature which has impressed the poet.

Write this outline on the board:

First: Name the subject
Second: Describe the subject
Third: Use one word to sum up our feelings or thoughts on this subject.

Show a picture of a deer.

Let's think of words to describe our subject--the deer, and I will write them on the board. (Suggestions: running fast, beautiful, bright eyes, leaping gracefully, evening shadows, thick green forests, listening carefully, bounds over trees)

Now think of one word that sums up our thoughts about this deer. (Suggestions: proud, scared, frightened, graceful, leader)

What is a syllable? How many syllables are there in the word deer? running? frightened? Discuss how a word is broken into syllables by giving many examples and having them respond by counting the syllables as you say words slowly and distinctly.

A haiku has 5 lines. The first line has one syllable, the second line has 3 syllables and two more syllables are added to each of the next two lines. How many syllables will there be in line 3? (5 syllables) *in line 4?* (7 syllables). *The fifth and last line, like the first line, has only one syllable.*

Here is a haiku that was written by David, a sixth grader. As I write it on the board, you examine it to see if it has the correct number of syllables - 1, 3, 5, 7 and 1.

Elk
Huddled close
Cold stormy weather
Falling trees from wind and rain...
Scared

Let us check one written by Jim.

Birds
Flying high
Over green forests
Below calm, Winding river...
Peace

Let us write one about our deer. Together have the class write a model haiku about the deer, carefully guiding them by asking questions which will lead the students through the procedure already discussed.

Show one or both of these films:

HAIKU (Stanton-1969) 14 min., color
Introduces haiku and explains the fascination of this unique, sensitive poetic form. Explains the structure and form and relates haiku to U.S. children in their every day surroundings.

MAKING HAIKU (EBE-1972) 8 min., color
Examples of children's haiku illustrated with excellent photography. Good to start a project.

Discuss the films.

Now with a good understanding of the pattern of haiku let each student select an animal and try writing a haiku on his own. They will share their poems tomorrow.

Oral:
Continue to discuss and share their news articles as suggested in Lesson 3.

ART:
Pass out two sheets of 9" x 12" paper to each student and give these directions:

Fold your papers into halves and illustrate four of these sentences that I write on the board. Please lable your pictures as you complete them. You may want to have these sentences written on a chart.

1. The season is winter. Draw trees that can be found in the deciduous forest.

2. Make a picture of a miniature coniferous forest. Draw and name a large mammal that lives here.

3. Draw and name a bird that can be found in the deciduous forest.

4. Show where some amphibians make their homes in the coniferous forest.

5. It is Christmas time. Monkeys are playing a game of tag high up in a group of trees. Draw them in this environment.

When completed share them, then put into their notebook folders.

SOCIAL STUDIES:

You are all ecologists. You have been asked to serve on a committee that will devise a long range plan to change the environment of your community, so that in 25 years the environment will be improved over what it is today. It will be just what you want it to be. There will be ample funds available for you to use in making these changes. Illustrate this new environment and write a description of it, telling how it will be different from your present environment.

Select two other class members to serve with you. You may work on this plan for the next two weeks, using our social studies time each day. When your plan is completed, you will present it to the class.

EVALUATIVE ACTIVITY:

Have the students complete the worksheet, FOREST BIOMES.

SUGGESTED EXTRA ACTIVITIES:

1. PRIVATE PROPERTY
   Make some rules for the use of a small forest, which you own. This forest has a lake and a stream.

2. BEFORE AND AFTER
   Think of a forest area.
   What did the area look like before the forest was there?
   What will it look like in 200 years?

Illustrate each answer and write description.

3. Build a jungle terrarium. Make small paper mache animals to be placed in this jungle.

4. Use coat hangers and make a mobile depicting any of the different forests.

5. Make murals of the forests. Select teams to make the backgrounds and the animals.

LESSON 4

DATE _____ NAME _____

FOREST BIOMES

1. Evergreen trees grow in the

   jungle deciduous forest coniferous forest

2. The forest near the equator is the

   deciduous forest jungle coniferous forest

3. Trees that shed their leaves grow in the

   coniferous forest deciduous forest jungle

4. Paper can be made from

   flowers glass trees

5. Unscramble these words:

   reset _____ tefrso _____ meobi _____

   gcyeool _____ oEc-siKd _____

   nrtnvenomei _____

6. Pretend our class can go on a field trip to visit a forest. Which forest would you like to visit first?

   deciduous forest jungle coniferous forest

   Why? _____

LESSON 5
(Designed for 5 days)

CONCEPT: Each of the three forest biomes has characteristics of its own. Through independent study, research and reporting the students will become more familiar with these three forest biomes. They will gain experience in sharing and working in groups.

MATERIALS:
Books on forests and ecology, placed in classroom resource center
Books may be secured from home-room library, school library, a public library, from the children's home libraries or from ecology groups.
List of information needed for reports, a copy for each student
Art supplies: paper, crayons, water color paints, paper towels
Notebook folders and paste
Writing paper
News items brought from home by students
Musical instruments: bells, rattles, drums and rhythm sticks
Materials may be needed by individuals and committees for their class presentations--gather as needed
Copy of SPELLING PUZZLE for each student
Graph paper
Visual Aids: Film: DISCOVERING MUSIC OF AFRICA (FA-1967) 20 min., color
Pictures of animals of the forests, collected by you and students
Record: Bowmar's "Children's Rhythms in Symphony"- Cuckoo in the Deep Woods

PROCEDURE:
FIRST DAY:
Secure from your school librarian a library period so you can take the entire class to the library today.

We have talked about the three types of forest biomes and have learned some things about each of them, but there is much more about each biome that we don't know yet.

What is the meaning of the word research? (Scholarly or scientific investigation or inquiry. To study thoroughly.)

Do you know any people who have made research their career? Discuss.

During the next week all of you will become researchers. Research can be done in any subject. When you look for information on forest biomes what kind of researchers will you be? (Ecology researchers.)

You may work alone, with a partner or in small groups. You will do research on as many of the three types of forest biomes as you have time for, but hopefully you can prepare information on more than one. When you have finished your research on one biome you and your group will give a presentation to the class.

Your information may include any information which you think is important, but it must include the following: (Prepare a copy for each student.)

1. Show all the places in the world where this biome is found.
2. Discuss the climate. What are the seasons like?
3. Tell all about the plants which grow here. Name as many as you can and show pictures if possible.

4. Tell why these particular plants grow in this biome.
5. Tell all about the animals which live here. Name as many as you can and show pictures if possible.
6. Tell why these particular animals live in this biome.
7. Discuss the relationships in this biome:
   How do the animals affect their environment?
   How does the environment affect the animals and plants?
   How do the animals affect each other?
   How does man affect this biome?

What are some materials you may find helpful in making your presentation to the class? (Discuss: pictures, drawings, transparencies, films and filmstrips if you have previewed them and you feel they are valuable.)

When you complete your research on a biome, look over the information you have gathered and decide on at least five questions which you think the class should be able to answer after hearing your presentation. These should be multiple choice, with 3 or 4 answer choices. Example:

Evergreen trees grow in the

deciduous forest *coniferous forest* *tropical rainforest*

Write out these questions, along with the correct answers, and give them to me. When we have finished studying forest biomes your test will consist of these questions you have prepared. This test will show not only how well you have learned, but also how well you have helped teach others.

Now we will go to our school library and look for books that have information and stories pertaining to ecology, our environment and plant and animal life in the three forest biomes. We will check out these books and use them, along with those we already have in our room library, as a resource library. You may have some interesting books at home, too, that you would like to share with us. If so, bring them tomorrow. Our library may have filmstrips pertaining to the forests, also. Select a committee to check with the librarian.

SPELLING:

Yesterday you wrote stories telling what you know about forests. I have read these stories and from the words that caused you trouble I have made a list that we will study during the next 3 weeks.

Write the list on the board, or on a chart. (If you have had time, a ditto copy for each child would be good.)

Return their stories. *Reread your stories and see if you can find any misspelled words. If so, look at our corrected list and make your corrections.*

Can you think of any other words related to the study of ecology or forests that you would like to learn to spell? (Add any that they suggest. You might make suggestions, too, asking their help to spell these words as you write them on the board: ecology, biome, deciduous, coniferous, pollution, relationship, Eco-Kids, etc. Encourage them to use phonetic skills in spelling these new words with you.)

Pass out writing paper. *Now please write, in alphabetical order, all of the words that are on the board and mark the syllables.* Illustrate by writing en/vi/ron/ment on the board. *Do you have any questions? When you finish, turn your paper over and then you may go to a filmstrip center or do reading from our resource library.*

When all have completed the lesson have the students put away pencils and use red crayons to make corrections as the spelling list is gone over together. Or, if you prefer, let them use an erasure and make corrections with their writing pencils. They will place their corrected papers into their folders.

ART:

Pass out 9" x 12" drawing paper. *Today we will illustrate a coniferous forest. Draw and color the complete background. Get another smaller paper, color and cut out some of the animals that live in this forest, and paste them onto your forest picture. Remember, whenever any of your projects are completed you can go to the viewing centers or resource library.*

LANGUAGE ARTS:

Creative Writing

What kind of poems did we write yesterday? Haiku. *How is this poetry like the cinquains we wrote earlier? How is it different?*

Review with the class the form of the haiku (1, 3, 5, 7 and 1 syllables in 5 different lines). *The cinquain has 5 lines also, but has one word, 2 words, 3, 4 and 1 word in each successive line.*

Together we wrote a haiku about a deer. Today let us write one about some plant that grows in a forest. Do you have any suggestions?

After this decision has been made proceed as in yesterday's lesson, writing on the board words and phrases that describe the plant. Next, think of words that will tell how the poet feels about this plant and write these on the board. From these words the class is now ready to compose another haiku together.

When the class has completed this haiku let them select a different plant and each student write one on his own.

Oral:

Share and discuss their news articles.

SOCIAL STUDIES:

During this week they will work on their plans to change the environment.

SECOND DAY:

RESEARCH:

Independent and small group study and research, using the visual aids centers and resource library which have been set up in the home room.

MATH:

If there are trees in your neighborhood, supply the students with pencils and paper and go for a 10 minute walk. Each student records the number of deciduous trees and coniferous trees that he sees. Back in the classroom compare results and arrive at an average number of trees.

There was a greater number of which type of trees? How many more?

Suppose the deciduous trees' average growth per year is 9". How much will they grow in 3 years? In 5 years? In 10 years?
(Answers: 3x9"=27" 5x9"=45" 10x9"=90")

How many inches are there in a foot? How could these answers be converted into feet? Discuss.
(Answers: 27÷12"=2'3"; 45÷12"=3'9"; 90÷12"=7'6")

Suppose the average yearly growth of the coniferous trees is 12". What will be their growth in 3 years? 5 years? 25 years? 50 years?
(Answers: 3x12"=36"; 5x12"=60"; 25x12"=300"; 50x12"=600")

Convert these inches to feet.
(Answers: 36÷12"=3'; 60÷12"=5'; 300÷12"=25'; 600÷12"=50')

Suppose the tallest coniferous tree we observed is 36 feet. How tall will it be in 3 years? 5 years? 25 years? 50 years?
(Answers: 36'+3'=39'; 36'+5'=41'; 36'+25'=61'; 36'+50'=86')

Suppose the tallest deciduous tree is 18 feet. How tall will it be in 3 years? 5 years? 10 years?
(Answers: 18'+2'3"=20'3"; 18'+3'9"=21'9"; 18'+7'6"=25'6")

How much taller will the tallest coniferous tree be than the tallest deciduous tree in 3 years? 5 years?
(Answers: 39'-20'3"=18'9"; 41'-21'9"=19'3")

Plan to complete and/or continue this type of lesson each day this week.

ART:

To make a picture of the deciduous forest we will use bits of scrap paper and things from nature that we will gather outdoors. Use your crayons for part of your background if you wish, but be creative and design your trees, plants and animals from things you collect, and from our art scrap box. You may want to use bits of colored tissue paper for the background.

Hand out paper towels. *Fold this paper towel into an envelope in which to gather your collection from the outdoors. We will go out for 10 minutes and then return to make our pictures.*

Allow an hour for this project. Some may need to work on it tomorrow.

SPELLING:

Pass out the dittoed spelling puzzle to each student.

On this puzzle page you are to find the ten words listed at the bottom of the page. These hidden words can be found in the puzzle. They may appear forward, backward, up, down or diagonally. As you find each word draw a box around it. Illustrate at the board.

When you are finished get some graph paper and begin to design a puzzle of your own, using words from your new ecology spelling list. We will finish them tomorrow.

At a given time have the pencils put away, and, using a red crayon, let them correct or complete the puzzle as the class goes over it together. Place the puzzle into folders.

LANGUAGE ARTS:
Creative Writing

What is a haiku? How is it different from a cinquain? (Review)

If you haven't completed your haiku about a plant, please do so now and then rewrite it if you feel it is necessary. If you have finished, perhaps you would like to write another one. Later, you may share them orally with the class.

Perhaps we can find a typist who will type our cinquains and our haikus so they can be compiled into a book of poems to become a permanent addition to our school library and our classroom library. Maybe someone of you has a parent who is a typist and he or she would consent to do this for us. (It is well to involve the parents whenever possible.)

Oral:

Share and discuss their news articles. Paste them into their folders.

LESSON 5
(Second Day)

DATE _____ NAME _____

SPELLING PUZZLE

L	A	C	R	N	G	P	O	S	T	W	Y	O
C	R	E	C	O	L	O	G	Y	V	C	E	R
G	T	F	L	I	M	L	P	Q	R	Z	N	D
A	F	B	Y	S	H	L	N	T	C	G	V	E
R	S	T	O	E	B	U	R	E	T	T	I	L
B	J	S	P	G	C	T	S	E	H	N	R	R
A	L	E	F	O	R	I	K	T	K	B	O	M
G	C	R	B	S	A	O	R	P	I	L	N	C
E	A	O	T	V	M	N	Z	O	E	H	M	I
B	J	F	K	S	L	P	M	Q	R	U	E	X
Z	L	P	D	V	B	E	C	A	M	O	N	P
R	C	F	S	D	I	K	O	C	E	K	T	S
P	D	J	G	F	O	N	D	J	B	L	A	R

Find these hidden words in the puzzle. The words may appear forward, backward, up, down, or diagonally. Draw a box around each word.

BIOME
ECO-KIDS
ENVIRONMENT
FOREST
GARBAGE
LITTER
NOISE
POLLUTION
SMOKE
ECOLOGY

THIRD DAY:

RESEARCH

Continue working independently and/or in groups.

MATH

Continue and conclude yesterday's lesson.

We have solved problems concerning trees in the forest. Now can we pose some actual problems pertaining to the plant and animal life in the forest?

Example: *Let us assume that the fox consumes 34 mice in 10 days. How many does he consume in 5 days? How many would 15 foxes consume in 10 days? in 5 days?*
(Answers: 34÷2=17; 34x15=510; 510÷2=255)

Be thinking about more such situations in the forests and tomorrow we will write stories and solve them.

SPELLING

Continue working on puzzles from yesterday's lesson.

Suggestions for other games and puzzles: design a crossword puzzle, password game, scrambled words, game of lotto, riddles about plants or animals, ecological sentences to be unscrambled (example: loving for Animals are). They may devise a game entitled, Travel Through the Forest. In all of these exercises encourage them to use their spelling list pertaining to ecology. These activities can be worked with partners or in small groups.

MUSIC

In what biome do the African people live? What do you know about their style of music? Discuss and let volunteers demonstrate rhythms on their desks.

The music of the native Africans has complex rhythms. We will listen to and feel these rhythm patterns as we watch the film, DISCOVERING THE MUSIC OF AFRICA. (20 min.)

African music has developed over many centuries and, in its own way, is as complex as the music we hear in the concert halls. Demonstrates the complex rhythmical music of the bells, the rattles and the drums. Describes how they are used today in Africa both as musical instruments and as a means of communication.

Have bells, rattles, rhythm sticks and drums ready and ask for volunteers to try to create African rhythmic patterns. If instruments are not available their chairs and tables may be used quite effectively. Have fun!

ART

We have illustrated the coniferous forest with crayons, the deciduous forest with colored paper and things from nature. Today we will illustrate the jungle, using water colors. With this art medium we can make brilliantly colored plants, birds and animals. You may paint the animals on other paper and cut them out to paste on. Be creative and discover how you wish to design this picture.

LANGUAGE ARTS

Creative Writing

If interest continues do more work with poetry. Class members may want to try other kinds of poems.

Oral

Share, discuss and paste into notebooks their news items.

FOURTH DAY:

RESEARCH:

Continue with their research and take time for any presentations that may be ready.

MATH:

Yesterday we thought about plant and animal life in the forests, posed some possible situations and from these we made story problems to solve. Today let us think about the giraffe. In which forest biome would we find the giraffe? On what do they like to feed? How long do you suppose a full grown giraffe's neck is? (Discuss, using ruler, yard stick)

Now you write a creative story problem for us to solve, one that concerns the giraffe. As these stories are read, volunteers go to the board to solve them while others work at their desks.

Encourage the class to pose other situations and the class will write related problems to be solved. Use a combination of skills--addition, subtraction, multiplication, division, and/or fractions.

SPELLING:

Using words from your ecology spelling list continue to design puzzles and games today. You may work with a partner or in a small group. Try to complete your puzzle today, so that tomorrow you can trade with others and solve their puzzles, or play their games.

What are some of the kinds of things you are creating? Discuss. Add to their list those ideas presented in yesterday's spelling lesson.

MUSIC:

Today I have a record for you and as you listen, close your eyes and try to determine what animals the instruments are imitating. Decide where these animals might be living. What instruments do you hear?

Play the record, Cuckoo in the Deep Woods from "Carnival of the Animals," found in Bowmar's Record, "Childrens' Rhythms in Symphony". (Discussion follows the listening).

Rhythm instruments may be used to accompany the music as other students work individually, or in groups, creating rhythmic routines. It will be best to use the gymnasium for this activity.

You may want to select other recordings from your school music library.

ART:

You will use your art period today to try to finish the illustrations of the forest biomes. Many of you are adding interesting details to each picture and this takes time. If you do not complete them today you can work on them again tomorrow. As you work you may be thinking about the cover you will design later--the cover for your notebook. What materials will you want to use, the title, and what art media will you choose?

LANGUAGE ARTS:

Creative Writing

Continue writing, sharing and compiling their poems. Partners may help each other with editing and making corrections in spelling.

Oral:

Share news articles.

Write this direction on the board, "Say something in ecology."

Read what I have put on the board, think about it and when you are ready to do what the direction tells you, raise your hand.

FIFTH DAY:

RESEARCH

Presentations to the class by individuals and groups.

MATH

If interest continues, pose more situations from the forests or field of ecology. Write and solve story problems from these situations.

ART

Allow time today to complete illustrations of the biomes. Others may begin to work on Job Card #5-3, or any other of the art ideas presented in the extra activities.

LANGUAGE ARTS
Oral

Be the teacher and present an ecological idea to the class. Take time to think about what you want to present before you volunteer.

EVALUATIVE ACTIVITY:

Edit the questions submitted by the class members during the week. If any changes are necessary go over the test with the writers before making any changes. Compile these questions into one test to give to the class.

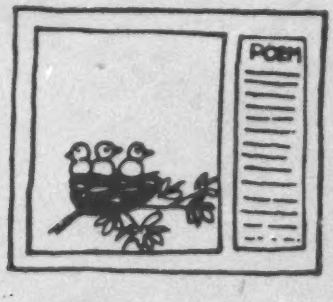
Their presentations, too, will serve as an evaluative activity for this lesson.

SUGGESTED EXTRA ACTIVITIES:

1. An animal from the deciduous forest is telling a child about his home and life in the forest. He also tells why he prefers living in this forest biome. Write the conversation that takes place between these two friends.

2. Divide the class into teams. Each team can make up a surprise box with some items made from wood and some made from other products. Trade boxes and devise games to see who can name the most correct "wood" items by only feeling the items.

3. Bird's Nests and creative writing:
Each child gathers materials from wooded areas (dried grass, feathers, string, etc.) These are glued onto a bird nest made from brown construction paper. The nest is placed on a small branch and stapled onto a 9" x 12" colored sheet of construction paper. Design baby birds out of cotton balls dipped into yellow or blue powder paint. Paste paper eyes and beaks onto the birds and place baby birds into the nest. Mount on large 12" x 18" paper, along with a creative poem, BABY BIRDS, which each child will compose.



4. ASSESSORS
Make an inventory of wildlife in your community.
Which are native?
Are they changing?
What do you expect will happen to them ten years from now?
Report your findings to the class.

LESSON 6

CONCEPT: Man has reduced and is continuing to reduce the size of the forest biomes. The Eco-Kids discover ways to conserve these biomes on Spaceship Earth.

MATERIALS:
Writing paper
Collection of articles originating from trees
Large cardboard box
Copy of crossword puzzle, "A Polluted Puzzle" for each student
Suggested films:
WASTED WOODS - (Sierra Club, 1965)
TREEHOUSE - (King Screen, 1969)
Guest speaker
Art supplies - drawing paper and crayons
Copy of "Riddle Game" for each student

For a list of films pertaining to tree uses and to their related careers, see the Master Materials list, page 5. You may want to use some of these films as you present this lesson.

PROCEDURE: *Are there as many forests today as there were 20 years ago? Why not?*

For what reasons has man destroyed some forest areas? (Cleared the land to build homes, cities, shopping centers, roads, airports. Man has caused forest fires by his carelessness. Other fires have been caused by lightning.)

Is man still using the forests today? How? (Cutting trees for lumber and for the manufacture of paper and many other articles which he uses in every day living.)

What would happen to the forest if man were to cut down trees without replacing them? (They would become smaller and would eventually be gone.) *What must man do to prevent this from happening?* (Plant more trees in the forests, take good care of the trees, help prevent forest fires, and stop wasting paper and other articles that originate from trees.)

LANGUAGE ARTS

Creative Writing:

Make a list of things you and your family use every day that originally came from a tree. Share with group.

Turn your paper over and list ways you waste paper and any other of these articles made from trees. Compare lists and make a class list to hang on bulletin board. This will be a daily reminder. Perhaps you may want to share with other classes.

Oral:

Students gather items made from trees and place them on a table. Examples: grocery sack, lunch sack, brown wrapping paper, gift wrapping paper, tissue paper, kleenex, newspaper, book, greeting card, picture of a Christmas tree, cardboard box, paper plate, paper cup, paper towel, pieces of scrap paper, paper napkin, wooden toys, paper dolls, musical instruments, milk carton, etc.

Divide the class into groups of 4 students each. Give each group two or more items from the table. They will decide how man wastes forests by their use of these items, and how man could change his ways of using these items in order to conserve forests. Groups report back to the class.

MATH

Solve this problem: How much paper do you and your classmates use and throw away during one school day? One week?

Put a cardboard carton in one corner of the room. Label it PAPER ONLY. Ask everyone to put all wastepaper into the carton. All other types of waste will go into the classroom wastebasket. At the end of each day, press the paper down into the box. Keep a daily record of the quantity of paper which accumulates - a box half full, a box full, or more. If there is a scale in the school, weigh the paper collected each day. Keep a record for 2 or 3 weeks. Design a graph for keeping this record.

Find out if the litter on the school grounds is caused by carelessness, by absence of trash cans, or both. Prepare a map of the school site and surrounding sidewalks, Mark on the map where you think trash containers should be located.

Plan a campaign to get all of the students in your school to help keep the area clean. Follow up the campaign with periodic reminders throughout the year. Plan awards.

The parents club might help you get attractive trash containers. Plan ways to keep a record of the amounts of trash and how best to empty these containers.

How could this paper that we throw away be used again? Discuss a few ideas.

Now write a list of your ideas, and in a few minutes we will stop and check to see who has thought of the most.
The list might include: Use it for: paper mache, collages, Japanese folder paper art projects, book markers, cut-out dolls and doll clothes, make wrapping paper, make beads, use strips for weaving mats, write on both sides, use for spelling and math work, head bands, make various kinds of greeting cards, make book jackets, make math flash cards using a felt marking pen. etc.

SPELLING

When you have completed the crossword puzzle, titled A POLLUTED PUZZLE, you will choose a partner with whom you will study and review your ecology spelling words.

Suggested films to be used:

WASTED WOODS (Sierra Club-1965) 15 min., color
Shows the malpractices actually taking place on forest lands; how the lumberman should spare the soil so it can produce trees on and on - sustained yield in fact and not just in the advertisements.

TREEHOUSE (King Screen-1969) 9 min., color
Poses the question of whether or not man can live in the world without obliterating its beauty.

Discussion of the films.

SOCIAL STUDIES

Today is the day our guest speaker will come to visit us and share his training and his duties. Do you recall the list of questions we mailed to him. Can you think of any other questions you would like to ask? Discuss.

Following this visit, write thank you letters.

ART

Together the class will list the uses of trees. Teacher will write them on butcher paper which is fastenec to the board.

Plants have roots. How do roots help trees to live and grow? How do roots help the soil that surrounds them?

1. Trees have roots that hold the soil and rocks.
   Without these, the land would wash away. If this happened, where would animals of the forest live?

For what reason besides food and shelter do animals need trees?

2. Animals need trees for oxygen.
   How can this be true? Trees turn carbon dioxide into oxygen. Without trees animals would not have enough oxygen. An apple tree in your yard produces enough oxygen to supply four people for one year.

How do you suppose trees, plants and grass help keep our earth clean?

3. Trees collect pollutants to help keep our earth clean.
   How could you prove this? (Check leaves of trees.)

What helps to make our parks, yards -- yes, our whole environment more beautiful?

4. Trees add beauty to Spaceship Earth.
   Give some examples. Can you imagine our parks and yards with no trees?

What kinds of jobs do trees provide for man? Reforestation which includes planting, seeding, spraying, fertilizing, thinning, etc., also forest rangers and tree surgeons.

5. Trees provide jobs for man.

If you were to work at one of these jobs which one would you choose? Why?

What do some homes and large buildings use to keep them cool during the heat? Air conditioners.

6. Trees are natural air conditioners.

How can this be true? Discuss. *A mature, well watered tree in front of your home can produce a cooling effect equal to ten room-size air conditioners running twenty hours a day. Do any of you have trees around your house? How do you think they affect the temperature within your home?*

What is climate? (The temperature average for a given area.)

7. Trees can affect the climate.

How can this be possible? Discuss. *Trees around your house save your parents money by making your home up to 20 degrees cooler in summer and by cutting the fuel bill by as much as 30 percent in the winter. The trees serve as windbreakers.*

What do trees provide for some animals and birds?

8. Trees are homes for some animals and birds.

Give some examples. What animals and birds live in the trees that are growing in your yard?

What else do trees provide for some animals?

9. Trees provide food for some animals.

Can you think of some examples? What parts of the trees are used for food? (nuts, fruit, leaves)

Pass out drawing paper. *Now illustrate three or more of these uses of trees. Write a paragraph to go with each illustration, discussing this use of trees.*

EVALUATIVE ACTIVITY:

Pass out copies of the Riddle Puzzle. *Here are some riddles. Each riddle has a one word answer. Write the answers on the blank lines. Then put the beginning letter of each answer in the empty boxes at the top of the paper and you will find the two word answer to this game.*

Read these directions with the class.

Use red crayons and correct the answers together. Place into their folders.

SUGGESTED EXTRA ACTIVITIES:

1. RECYCLING
   Start a student organized paper recycling program. Let this be an on-going activity for the year. Detailed directions are included in the enclosed lesson titled, "Recycling Paper."

2. IMPACT
Find out who's who in conservation of forests.
Today In the past

What have they done? What can you and your family do to help with conservation of forests? Report your findings to the class.

3. HOT PLOT
Plot the life story of a forest fire.
What control was used?
What could have been done?

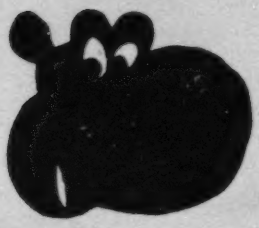
4. CONSERVATION CONSERVATION
With friends, prepare a series of pictures showing various needs for forest conservation.

5. REST IN PEACE
Write an obituary (death notice) for something in nature.
Some suggestions:

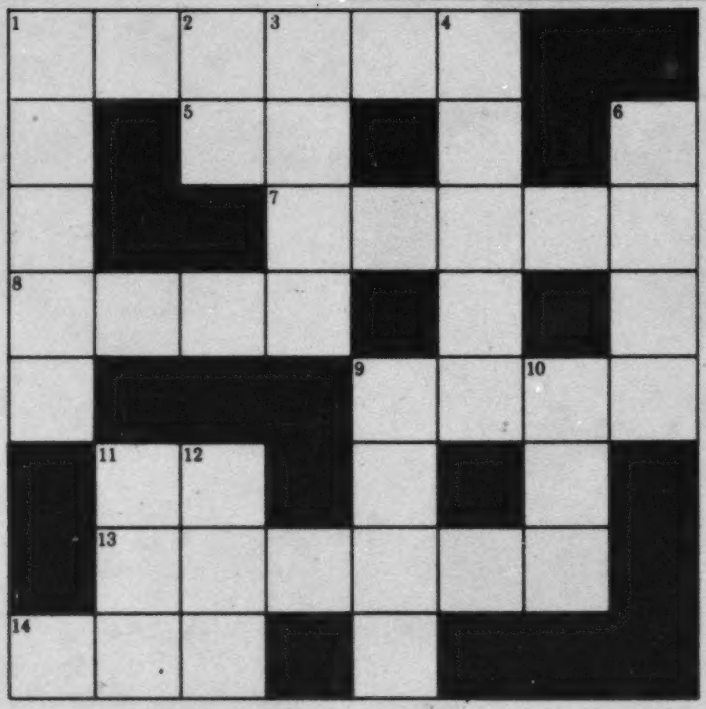
winter	an eagle
a forest	a stream
an insect	a deer

6. ECOLOGISTS
Make a list of things that are harmful to plants and animals in the forest. You are an ecologist assigned the task of protecting the forests from these harmful things. Make a list of things you plan to do to save these plants and animals from being harmed.

Polluted Puzzle



Lots of people are worried about pollution. I'm worried—are you? We have to help clean up our world.
Many of the words in this puzzle are about pollution.



Down

1. U.S. birds that are dying out
5. A sound of laughter
7. Mixtures of smoke and fog
8. Something the Queen of Hearts baked
9. Something in gasoline that pollutes the air
11. a, e, ..., ..., u
13. Trash left around by some bad "bugs"
14. Everyone

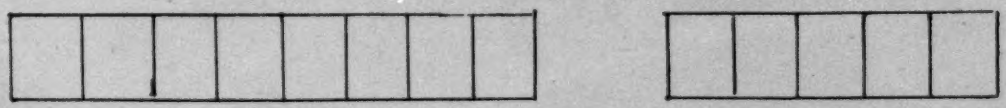
1. The planet people are polluting
2. e, f, ..., ..., i, j
3. Whales will be extinct when the very ..... whale is dead.
4. It goes up chimneys to pollute the air
6. Secondhand, not new
9. Short way to say "let us"
10. It should be clean for breathing
11. Sick
12. It can spread on water and kill water birds.

LESSON 6

Date _____ Name _____

RIDDLE GAME

Here are some riddles. Each riddle has a one word answer. Write the answers on the blank lines. Then put the beginning letter of each answer in the empty boxes and you will find the two word answer to this game.



First word:

1. The kind of forest where evergreens grow. _____
2. What animals need to breathe. _____
3. A home for birds. _____
4. An antonym for the word hard. _____
5. Study of how living things affect each other. _____
6. Someone who helps take care of the forests. _____
7. These plants are food for man. _____
8. Everything around a living plant. _____

Second word:

1. Pencils and paper are made from these. _____
2. This is another name for the jungle. _____
3. Those who are champions of what is good and clean. _____
4. The kind of trees that grow in a coniferous forest. _____
5. An anotnym for the word to waste. _____

LESSON 6

Date _____ Name _____

RIDDLE GAME
(Answer Sheet)

Here are some riddles. Each Riddle has a one word answer. Write the answers on the blank lines. Then put the beginning letter of each answer in the empty boxes and you will find the two word answer to this game.

C	O	N	S	E	R	V	E

T	R	E	E	S

First word:

1. The kind of forest where evergreens grow. (coniferous)
2. What animals need to breathe. (oxygen)
3. A home for birds. (nest)
4. An antonym for the word hard. (soft)
5. Study of how living things affect each other. (ecology)
6. Someone who helps take care of the forests. (ranger)
7. These plants are food for man. (vegetables)
8. Everything around a living plant. (environment)

Second word:

1. Pencils and paper are made from these. (trees)
2. This is another name for the jungle. (rainforest)
3. Those who are champions of what is good and clean. (Eco-Kids)
4. The kind of trees that grow in a coniferous forest. (evergreens)
5. An antonym for the word to waste. (save)

RECYCLING PAPER

PURPOSE:

To start a student-organized paper recycling program.

ACTIVITY:

A school paper recycling campaign.

Your school is a small community. Like any town, it produces trash which is hauled away and either dumped or burned. A great percentage of the trash is probably discarded paper. It is a simple matter to separate this paper from the rest of the trash and recycle it. Paper is also safer to handle than glass or metal. Students will learn to cooperate and take on responsibility. They'll understand the demands and problems of a community recycling program.

PROCEDURE:

1. Contact community service groups or firms in your area who accept paper for recycling.
2. Make sure the firms or community groups are really recycling the material. Some programs are mislabeled "recycling" programs when they merely transfer trash from one dump to another.
3. Decide on collection points. Select representatives from the class to talk to the head janitor. Choose conveniently located areas around the school for setting up collection boxes. Get permission from the principal.
4. Set up containers into which people can put their bundles of paper. Large four-ply bags, cartons or metal or cardboard drums are suitable receptacles.
5. Set regular times for collections. A half hour before or after the school day is probably the best time for most students to bring the paper.
6. Look for a temporary storage place. If your students can't take all of the paper to the factory the same day they collect it, they will need a storage place until the paper can be hauled away. Again, ask the janitor to suggest the best location.
7. Arrange for cars and drivers. Parents might be willing to transport the paper to a community recycling center or firm. If there is a mill which converts used paper into new paper, you might take a class trip there and watch the process.
8. Launch a strong publicity campaign. It's the best way to get your program started. Make posters and hang them up around the school. Stress the program's ecological value.
9. Distribute information sheets to the other homerooms. Include on the sheet the location of collection points, instructions for separating and bundling the paper, and what materials are acceptable. Give the information sheets to the secretarial staff in the main office and the cafeteria workers. They use a lot of paper, too!
10. After the initial publicity drive, try some of these activities to keep the recycling program going strong:

SOURCE: Recycling
Educational Services Division
Rodale Press, Inc.
Emmaus, PA.

a. Sponsor a contest. Give a prize to the homeroom that turns in the most paper during a designated time period.
b. Get the cooperation of the school newspaper. Write articles for the paper describing the progress and problems of the program.
c. Start an honor roll giving recognition for outstanding participation in the recycling program. You could post the honor roll on the school's main bulletin board or publish it in the school newspaper.
d. Hold a recycling assembly program. Show films or have a speaker on recycling. Have the principal present a certificate, plaque or medal to the homeroom or individual doing the most for the school recycling effort.

LESSON 7
(Designed for 2 days)

CONCEPT: The Eco-Kids go on a field trip to have first hand experiences with one or more of the forest biomes. They will gain skills in making and reading maps.

MATERIALS:
Request for for a field trip
Student permission slips for field trip
Transparency of map of Foster's Island at University of Washington's Arboretum
Map of the area to be visited - one for each student
Pictures of typical plant vegetation for identification purposes (included at close of this lesson)
Suggested visual aids:
Films: MARSH COMMUNITY (EBE-1966)
NATURE NEXT DOOR (Sierra Club)
Filmstrip: VISIT TO THE WOODS (EBE-1967)
Writing paper, pencils, manila folder for each student
TV Guide, WORLD'S IN BALANCE, KCTS-TV, Seattle, Washington, pages 323-330 for Teacher's Reference
Singing books from your classroom
Song - HAPPY WANDERER, found in THIS IS MUSIC, Allyn & Bacon, Grade 2

NOTE TO TEACHER: If you live in the Seattle area there are several places that may be visited to explore a coniferous forest, along with some deciduous trees. Suggestions include:

1. Snoqualmie National Forest
2. Camp Waskowitz near North Bend
   On Wednesdays during spring and fall camping seasons there is often a bus that goes from Highline area to Waskowitz, making a return trip on the same day. Call Chuck Hardy's office at 433-2458 for further information.
3. Point Defiance Park, Tacoma, Washington
4. Seahurst Park
5. Salt Water Park
6. Foster's Island at the University of Washington Arboretum, deciduous trees
7. Artificial tropical rainforest
   a. Swanson's Land of Flowers Nursery
      9701 15th N. W., Seattle, WA
      Call 782-2544 for tour arrangements
   b. Greenhouse at Volunteer Park
      15th Ave., Seattle, WA

   Several greenhouses are set up to recreate artificially the environment of the tropical rainforest. For comparative studies, an experience with this biome may be of value and perhaps it could be visited the same day or on the way to or from a coniferous and/or deciduous forest.

   In these indoor settings, where temperature, moisture and humidity can be carefully controlled, many of the tropical rainforest plants are grown, including orchids, gardenias and palm trees.

BACKGROUND INFORMATION: Use one day preparing the class for your selected field trip. Prepare a map of the area, for all participants to use, or, together with the class, draw a map and have each member take this map along tomorrow.

A detailed introduction to Foster's Island at the University of Washington Arboretum is presented in this lesson. It is designed to prepare the students for a trip to this area and should help make the trip more meaningful. Further information on this particular trip may be found in the TV Guide, WORLD IN BALANCE, KCTS-TV, Seattle, WA., pages 323-330. The Arboretum has slides available of their many species of trees. Included is a scripted program, "The Arboretum Through the Year." This may be borrowed to show in your classroom by calling 543-8800.

The following lesson may serve as a guide as you prepare an introductory lesson for a field trip to any area you choose.

PROCEDURE: FIRST DAY

Which of the three forest biomes should we be able to visit around our area? (coniferous)

Who has visited the University of Washington Arboretum? (Discuss) *What kinds of trees did you see?*

The arboretum, while it is not a true deciduous biome, does contain many deciduous trees not generally found in our area, but which have been planted here as exotic species. Tomorrow, as we visit Foster's Island, an area in the Arboretum, what should we look for? (Plant life, animal life, ways in which they interact, the type of environment, climate, soil, etc.)

If available, show and discuss the slides, "The Arboretum Through the Year."

Show transparency of "Foster's Island" map and pass out individual maps.

Introduction and discussion of Foster's Island: *Foster's Island has been in continuing change since its formation by glaciers long ago. When Lake Washington was lowered in 1916 more land was added. Soon after this, water and marsh life began to grow. Next appeared insects, birds and mammals. Why?* (Because these new plants and trees provided homes for them.)

Dead and dying trees have provided nutrients for insects, fungi, and as they go through cycles of reproduction and death, these nutrients are returned to the soil. How will these nutrients be used again? (Plants need nutrients in the soil for their growth. Animals need plants for food and shelter.)

Now let your fingers walk through this small forest community as we study our maps. Enter at the parking lot and we will notice the large black cottonwood tree. What do you suppose may be the diameter of the tree at your neight? (4 to 5 feet)

Number 2 is Bamboo Island. As we walk toward the water from the parking lot we will see brush, shrubs and small trees which protect the Island from erosion. In the water we should see domestic geese and ducks, and native mallard ducks and coots. Male mallards have green heads with white neck bands and curled tail feathers. The female has drab, chestnut-colored body. Coots are natives who are nearly all black with dark grey wings.

As we cross the bridge to Foster's Island we can see the lagoon to our left. The plant life and variety of fish are part of a natural food chain.

We will notice dense areas of cattails. Here birds and some animals feed. We may see a black muskrat. A variety of insects, such as midges and mosquitoes, feed on the cattails.

The B area consists of native shrubs and A is the marsh. C is a planted woodland area where birds and animals live. The most numerous birds in the marsh are the red-winged blackbird, the tub marsh wren, but gulls, ducks and herons can also be found. The insect life in the marsh is very important in maintaining a food chain. The "friendly" dragon fly destroys mosquitos, gnats and other pests, and are a natural balancer of the insect world.

As you look at the key on your map you can find out what 4 and 5 are, also C. Discuss.

What are mammals? How are they different from other animals? What mammals would you expect to find here? (raccoons, coyotes who are rare on the island, and mink, the fast swimmer.) *What would the raccoon feed upon?* (fruit, insects, birds and small animals). *The mink is the chief predator, but removes only the excess weak or disabled individuals and thus helps maintain a balance in the community.*

Some of the squirrels and rabbits are native and some have been introduced by man. The native animals are those whose habitat has not been altered much. There is little chance of finding deer or bear. Why? (Because of the competition of finding food and shelter and these animals are often eliminated by man.)

As we proceed to the Freeway we come to Number 7. What is this? (tunnel) *Again we see areas A, B and C. Tell what they are. As we return through the tunnel we come upon area D. What is this?* (Willow jungle.)

These wooded areas are a miniature forest community. The D area is willows that are interlaced and look somewhat like a jungle. In the forest community we will notice the different levels of vegetation. The forest cover is called what? (canopy) *The lower level of undergrowth has bushy plants. The forest floor receives only a small amount of sunlight. Why? In early spring and autumn the temperature will be highest on the leaf litter found on the forest floor. Why?* (Few leaves on trees and sun shines directly on forest floor).

Now, what should we try to observe tomorrow as we take along our folders with maps, paper and pencils? Discussion.

Study and discuss the pictures of the main plant vegetation in the coniferous and deciduous forests of the Northwest. You may want to have copies made to pass out to the class. These pictures are included at the close of this lesson and in the kit.

Suggested Visual Aids to be used:

Films: MARSH COMMUNITY (EBE-1966) 11 min., color
Investigates a community in transition. Explains why the marsh is changing, illustrates living things and their adaptations to the marsh environment, and asks: what will become of these plants and animals as the marsh continues to fill in.

NATURE NEXT DOOR (Sierra Club) 28 min., color
The Tilden Regional Park in the Berkeley Hills, close to San Francisco. Uses the enthusiasm and excitement of children discovering the fascinating world of wild things to show the importance of wild areas close at hand.

Filmstrip: VISIT TO THE WOODS (EBE-1967) 33 frames, color
A visual field trip to study living things as they exist in their natural environment. Provides opportunities for discovering ecological concepts. Valuable either before or after an actual field trip.

Discussion of visual aids.

MATH:

The distance around a rectangle is its perimeter. Choose a student to come to the board and draw a rectangle.

You are going to select a wooded area for a National Park. The area is 56 miles by 39 miles. You are going to have a road built around the park. How many miles of road will be needed? Each student works the problem and answers are compared. (190 miles)

The average of several things is always less than the largest number and larger than the smallest number.

You measured the circumference, or distance around, 6 trees in your park. The circumference of the largest tree is 12 feet. The circumference of 5 smaller trees is 6 feet, 8 feet, 10 feet, 5 feet and 7 feet. What is the average circumference of the trees measured? (Answer: 8 feet)

There is a marsh in your park. Together, three friendly dragon flies ate 340 mosquitos, 267 gnats and 629 aphids. How many insects did they eat altogether? (Answer: 1236 insects)

If each dragon fly ate the same amount of insects, how many insects did each individual dragon fly eat? (Answer: 1236 ÷ 3 = 412 insects)

LANGUAGE ARTS:

Creative Writing

What litter may we find tomorrow on the forest floor? Name some man-made and some natural forest litter. (Discuss)

Now, choose one of these objects and write a descriptive riddle about it. You might tell how it feels when you touch it, how it smells, how it looks, what sound it makes when you step on it or shake it, or what it may taste like if you were an animal eating it. Use these 5 senses in writing your description. When you finish you will read your riddles and others of us will try to guess the correct answers.

Oral:

Share news items.

MUSIC:

In your singing books that you use in your classroom look for songs that pertain to Forest Life. "The Happy Wanderer" is very appropriate to sing as you go on Nature Walks. It can be found in THIS IS MUSIC, Grade 2, Allyn & Bacon.

EVALUATIVE ACTIVITY:

Go for a walk in the neighborhood to try to find samples of hemlock, fir, spruce, cedar, big leaf maple, vine maple, alder, salal, ferns and evergreen blackberry.

Upon returning to the classroom students will mount their specimen and identify them by writing the name beside each mounted item.

Upon completion, discuss and use the pictures to verify the correct names of their specimen. Press - place in notebooks later.

If there is no area nearby where the class can gather these samples, perhaps you can have specimen mounted ahead of time, and let them identify these mountings.

If it is not possible to gather samples, have the students illustrate and identify samples of vegetation from both the deciduous and coniferous forests.

SUGGESTED EXTRA ACTIVITIES:

1. WASTE NOT - WANT NOT
   Find a way to show five things that had their origin in the forest, but man is wasting them. Can you make one of the things something you can't see? Good thinking to you!!

2. T-I-M-B-E-R
   Show the uses of trees.
   Clue: don't forget the leaves and bark.

3. TREE MAP
   Locate and plot on an area map all the trees of a specific type. Is there a pattern to be seen?

4. TOMORROW?
   Look for signs of man building up and tearing down his earth. Write a story: "How to Survive in Our World".

5. CRYSTAL BALL
   Develop a description of yourself 20 years from now. Where are you going? What are you doing?

SECOND DAY:

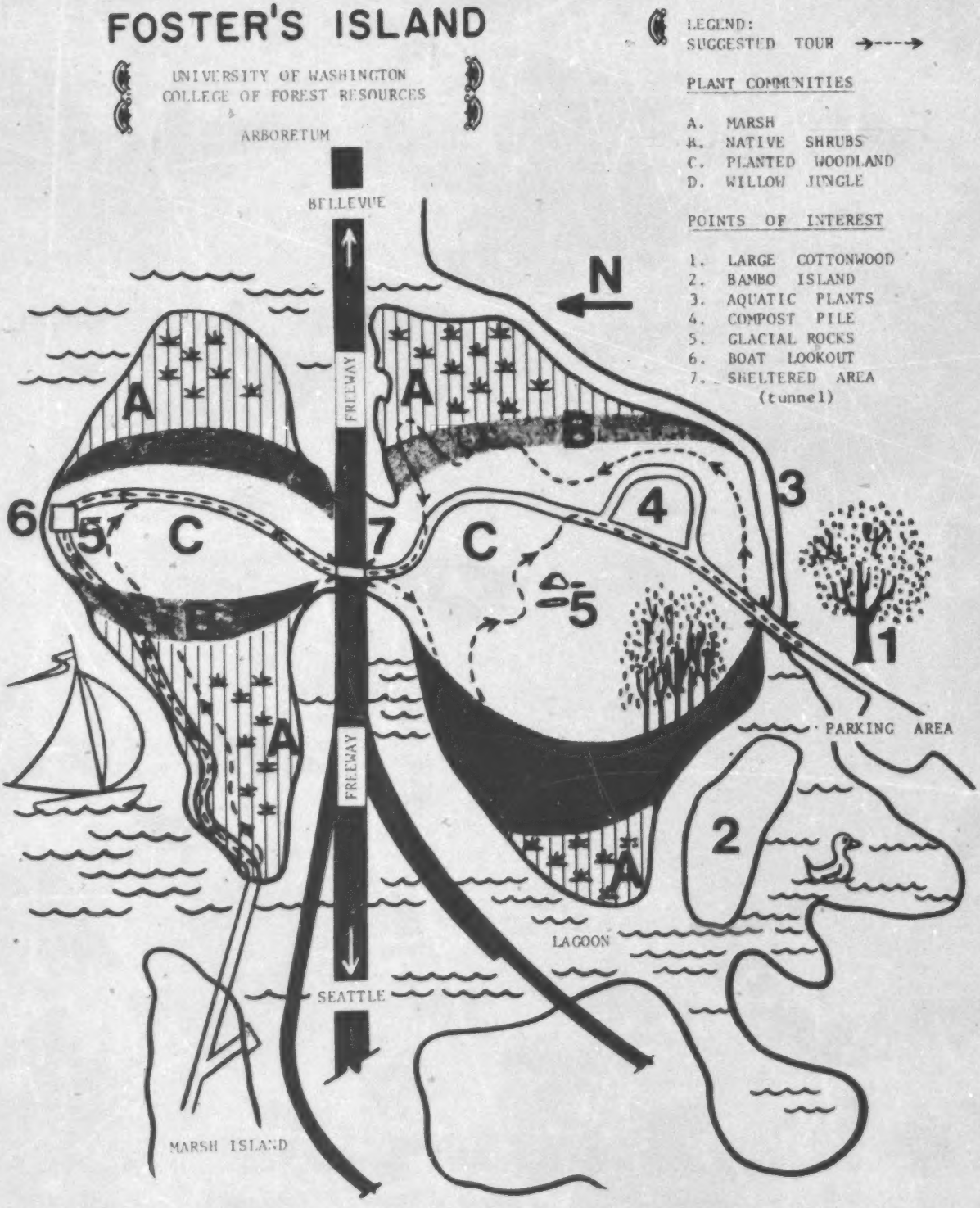
Field trip to selected area. Each class member takes along a folder into which is stapled a map of the area to be visited and paper on which to note observations made during the trip. Pencils tied with string can be attached to the folders.

Back home in the classroom discuss the field trip.
What insects did you see? Mammals? If you saw no mammals what, if any, evidences did you note to prove that some do live here? What small plants did you observe? Did you see any deciduous trees? What other kinds? What kinds of litter did you notice on the forest floor? What people did you see? Do you think any of them may have been conservationists? What makes you think so? What were they doing? Are there any questions you would like to ask?

EVALUATIVE ACTIVITY: Make a drawing of your most interesting discovery of the day. Write a descriptive paragraph about it. Share with the group. Place into folders.

FOSTER'S ISLAND

UNIVERSITY OF WASHINGTON
COLLEGE OF FOREST RESOURCES



LEGEND:
SUGGESTED TOUR →----→

PLANT COMMUNITIES

A. MARSH
B. NATIVE SHRUBS
C. PLANTED WOODLAND
D. WILLOW JUNGLE

POINTS OF INTEREST

1. LARGE COTTONWOOD
2. BAMBO ISLAND
3. AQUATIC PLANTS
4. COMPOST PILE
5. GLACIAL ROCKS
6. BOAT LOOKOUT
7. SHELTERED AREA (tunnel)

The main conifers found in the
Northwest coniferous forest:

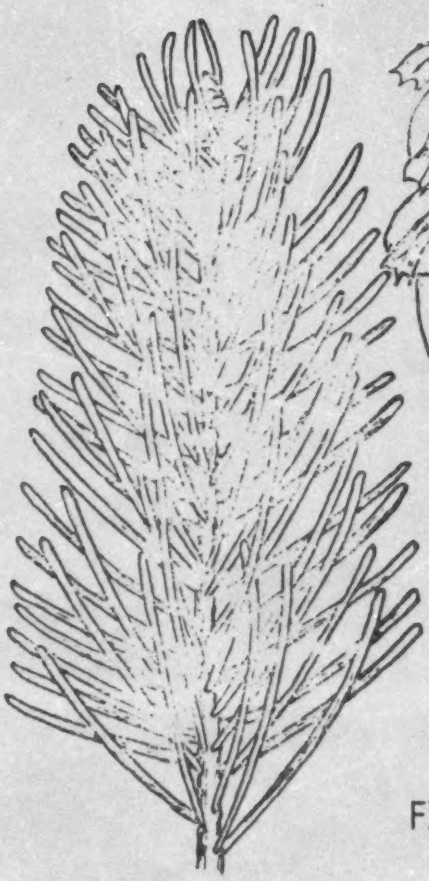
dry cone

green cone

Grows to 175 ft.
Soft needles

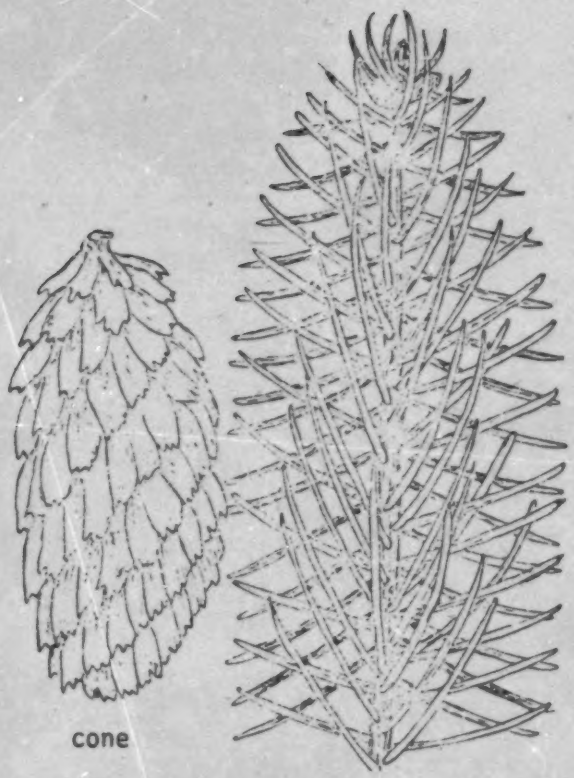
HEMLOCK

Can be 200 ft.
Needles not sharp to touch.
Good as Christmas trees.



cone

FIR



cone

SPRUCE

Needles sharp to touch.
May grow 200 ft.

cone
cluster

CEDAR

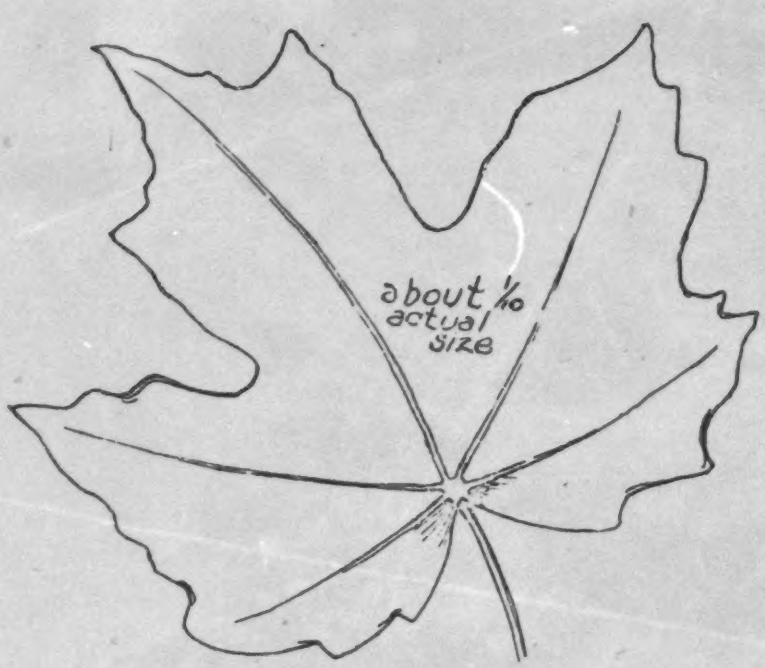
Flat, overlapping needles.
Map grow 200 ft.
Pleasant fragrance.

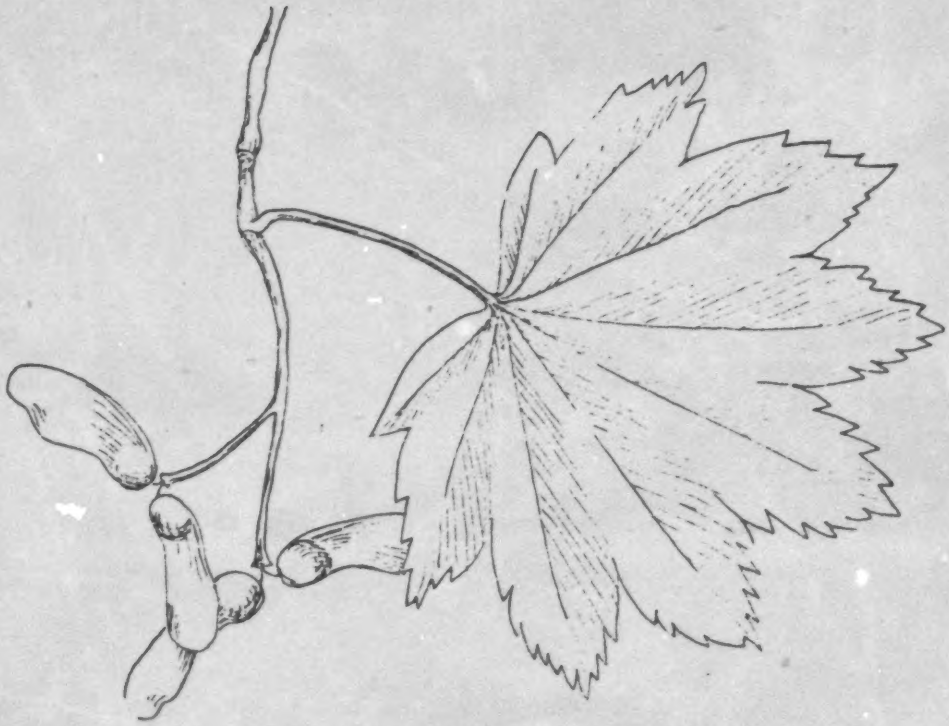
The main deciduous small trees found in the Northwest Coniferous Forest:

BIG LEAF MAPLE

Grows to 80 ft.

Winged seeds -----





VINE MAPLE

Seldom taller than 25 ft. Very colorful in early fall.

ALDER

May grow to 90 ft.
Underside of leaf is silvery.

The main small plants found in the
Northwest coniferous forest:

SALAL

3 to 4 ft. tall

FERNS

EVERGREEN BLACKBERRY

lavender
blossom

LESSON 8

CONCEPT: As the Eco-Kids conclude their study of Forest Biomes they will gain skills in writing, completing, summarizing and organizing their work into notebooks which they will place in the school library to be shared with other classes.

MATERIALS:
News items
Writing paper
Spelling test
Art supplies
- 12" x 18" paper for folders
- scrap box
- crayons
- paste, scissors, glue
- paper punch, stapler, brads, yarn

Folders containing all of the written and art work of each student

PROCEDURE: *You have completed your research and study of the forest biomes and now you will use the next few days to complete, correct and organize your materials into a notebook. During our art periods you will design and make your notebook covers.*

LANGUAGE ARTS

Oral:

Today we will have our final sharing and discussion of news items. I am sure that you will want to continue to be interested in all news that is related to ecology. Perhaps we can keep a NEWS bulletin board in our room all year where we can post the really important news items about our Spaceship Earth.

Share and discuss news items.

Creative Writing

Read through your collection of news clippings that you have pasted into your notebooks. Try to determine the types of people and occupations involved in the preservation of our environment. Write a paragraph telling what you found. Write another paragraph telling "Why I Would Like to Work in a Forest", or "Why I Would Not Like to Work in a Forest."

Volunteers may read their stories to the class.

Organizing Notebooks

What are some things you need to do to your contents before you put your notebook together? (Complete, edit and organize the contents.)

You may want to improve some pages by rewriting them. When the notebooks are completed they will be placed in our school library where they can be shared with other classes. Later you will want to take them home to share with your family.

Make plans with your school librarian to have the notebooks placed in the library -- perhaps for two weeks.

There are many extra activities listed on job cards. Some of these may be of special interest to you. When you have completed your cover and have your contents corrected and organized you may work on any of these cards you wish and then place them into your notebook.

ART:

As you plan a cover for your notebook what are some things you may want to include on this cover? (A title, name of author--written and illustrated by _____, some type of illustration.)

What are some interesting art media that you could use? (Cut paper, drawings, paintings, colored chalk, objects from nature)

Much work has gone into these notebooks and you will want to design an interesting and different type of cover. Be creative! Plan to use more than one art period to complete it. Think about how you want to fasten your notebooks together. What could be used? (paper punch, yarn, brads, staples)

Pass out paper for notebook covers, letting each student select a color of his choice.

SPELLING:

Let the class review individually or in small groups the ecology spelling words they have been using and learning during their work with this Pak. Design a test of these words which will be given to the class after they have completed their review.

This suggested type of test checks both their spelling and understanding of the words:

Examples:

1. This word means the study of all living things and the relationship between themselves and their environment -- ecology.
2. These are special kids who are friends of all plants and animals. Eco-Kids
3. Everything surrounding us is called our environment.
4. A large part of the earth that has the same kind of climate is called a biome.
5. Biomes with many trees are called forest biomes.
6. These kinds of trees shed their leaves. deciduous
7. The climate in this forest is hot and humid. jungle or rainforest.
8. This forest is found in the tropics.
9. Trees in this forest are evergreen and they drop needles onto the forest floor. coniferous
10. Rainfall and temperature determine what type of climate a biome has.

11. An antonym for man-made articles. natural

12. What plants put into the air for man to breathe. oxygen

13. Homonym for there, meaning it belongs to them. their

14. Many kinds of enemies that are harming Spaceship Earth. This word has three syllables. pollutions

15. Living creatures that live on Spaceship Earth. This word has three syllables. animals

SOCIAL STUDIES:

Reports and discussion of environmental plans the committees have prepared.

EVALUATIVE ACTIVITY: The covers and contents of their notebooks will be the evaluative activity.

SUGGESTED EXTRA ACTIVITIES:

1. Write an imaginative story on, "Life in a Tree", "Eco-Kids Save a _____?_____." "How I Live Under a Rock", "How it Feels to be an Ant in the Forest"., etc.

2. Describe what you want your environment to be like in 10, 20 or 50 years. Illustrate it, too.

3. Go out and find these objects. Look at them, feel, smell and listen to them. Then put them on our science table for someone else to observe. Now write a description of as many as you wish.
   A flower
   This year's deciduous leaf
   Last year's deciduous leaf
   Needles from a coniferous tree
   A piece of bark
   Wet soil
   Dry, sandy soil
   A pine cone

4. OUT OF FORESTS
   Project what your life would be like if all forests were eliminated permanently.

EVALUATION

DATE _____ NAME _____

CAN I MATCH WORDS AND MEANINGS?

The words in List B match phrases in List A. Write the letter of the matching word or words in the blank.

List A	List B
_____1. a study of how living things affect each other	a. environment
_____2. different kinds of living things in one place	b. jungle
_____3. everything around a living thing	c. forest
_____4. friends of plants and animals	d. litter
_____5. trees that shed their leaves	e. paper
_____6. a place that is warm almost every day of the year	f. trees
_____7. misplaced trash	g. biome
_____8. homes for some animals	h. deciduous
_____9. a place where many trees grow	i. ecology
____10. this can be recycled to help save trees	j. Eco-Kids

CAN I USE THESE WORDS CORRECTLY?

Choose a word from the list to complete each sentence. Write the word on the blank.

survival evergreen living environment biome

1. The coniferous forest is the home of the _____ trees.
2. All that can be seen, felt, tasted, touched and smelled is our _____.
3. Eco-Kids battle pollutions for _____ of Spaceship Earth.
4. A _____ is an area in which specific plants and animals live.
5. Ecology is the study of how _____ things affect each other.

EVALUATION (Page 2)

TRUE OR FALSE?

On the blanks write T if the sentence is true and F if the sentence is false.

1. _____ The desert biome has no effect on the cactus plants that grow there.

2. _____ Trees growing near a home can keep the home cooler in summer and warmer in winter.

3. _____ The forest biomes are fewer in number and smaller in size than they were 200 years ago.

4. _____ The bottom layer of a forest is called a canopy.

5. _____ The climate of our area is determined entirely by the average amount of rainfall for a year.

6. _____ Large parts of the earth that have the same climate are called biomes.

7. _____ This piece of paper is man made but had its origin in nature.

8. _____ Dragon flies and mosquitos have an effect on each other, but they have no effect on their environment.

9. _____ The environment of a tropical rainforest would meet the needs of a banana tree and a monkey.

10. _____ You do nothing, as you spend a day in school, to affect your environment.

11. _____ The environment of your school community would meet the needs of a date tree and a camel.

12. _____ When man moves to a different biome he usually is able to adjust to this different environment.

13. _____ Wheat and other grains grow well in the grasslands biome.

14. _____ The deer is an amphibian that makes its home in the deciduous and coniferous forests.

15. _____ The tundra biome lies in the Tropic of Cancer.

EVALUATION (Page 3)

DO LIVING AND NON-LIVING THINGS CHANGE IN THE SAME WAYS?

A puppy will change in some ways during the next year. A bed may also change in a year. Some of these changes are listed below. Write an X by each way that the puppy will change and by each way that the bed will change.

WAYS A PUPPY WILL CHANGE	WAYS A BED WILL CHANGE
1. _____ size	1. _____ size
2. _____ shape	2. _____ shape
3. _____ weight	3. _____ weight
4. _____ healed scratches	4. _____ healed scratches
5. _____ looks different	5. _____ looks different

WHICH IS BEST?

For each of the questions below, circle the answer you think is the best.

1. When an ecologist plants more trees the amount of oxygen for people to breathe is
   a. decreased
   b. increased
   c. stays the same

2. My family can help conserve the forests by
   a. burning logs in the fireplace to heat our home
   b. using paper napkins every day
   c. using both sides of a sheet of paper

3. In the tundra biome there would be
   a. many green trees
   b. much snow and ice
   c. many bears and birds

4. In which forest would you find the thickest undergrowth the year round?
   a. coniferous forest
   b. deciduous forest
   c. tropical rainforest
   d. all of these

5. What should be done with daily newspapers?
   a. save for recycling
   b. place in garbage
   c. burn in fireplace to help heat our homes

6. If you chose a reforestation career you would
   a. plant more trees
   b. take care of camp sites in National Parks
   c. do research in saving animals' lives

7. A forest ranger helps
   a. cut down trees
   b. build roads in the forests
   c. protect the forests by watching for forest fires

8. If you worked in a pulp and paper mill you would
   a. manufacture paper products
   b. plant trees
   c. cut down trees

9. National Parks are places where we can
   a. pick wild flowers
   b. camp and enjoy the beauty of forests
   c. feed wild animals

10. To be an ecologist who works with forests you
   a. need no special training
   b. need very little training
   c. need special training

ECO-KIDS LESSON ACTIVITIES

Lesson Number 1 Extra Activity Number 1

RELATIONSHIPS

Name some living things that participate in the following relationships:

Two living things: If one died, the other would die.

A living thing which lives off the remains of something which was once living.

A living organism which lives off the life system of another living thing.

Two living things which are beneficial to each other, but not dependent on each other.

Name each of the above relationships.

ECO-KIDS LESSON ACTIVITIES

Lesson Number 1 Extra Activity Number 2

SURVIVAL

Find an interesting environment outdoors. Be seated and list things in this environment that you can taste, smell, see, hear and feel. List them in their proper categories.

Now select five things from your lists that you feel are the most important for your survival on Spaceship Earth. Write a paragraph telling why you made this choice.

ECO-KIDS LESSON ACTIVITIES

Lesson 1 Extra Activity Number 3

WHAT DO I NEED?

Find five things that you need which are manufactured from natural resources.

Go exploring.
Why do you really need them?
Think about the future.
Will you still need them?

Write a story that will answer these questions.

ECO-KIDS LESSON ACTIVITIES

Lesson 2 Extra Activity Number 1

WHO LIVES WHERE?

Find a nest.
Sketch it and observe it.
Do birds use the same nest year after year?
Do just birds make nests?

ECO-KIDS LESSON ACTIVITIES

Lesson Number 2 Extra Activity Number 2

SILENT WORLD

Check on this and report to the class:
What would the world be like if there were no plants?
No animals?

ECO-KIDS LESSON ACTIVITIES

Lesson Number 3 Extra Activity Number 1

GO AWAY WITH YOURSELF

Go some place in your biome where you can be completely alone. Stay 15 minutes.

Where did you go? Why did you go there? How did you feel? Had things changed since you were last there? How had they changed?

ECO-KIDS LESSON ACTIVITIES

Lesson Number 3 Extra Activity Number 2

I SEE!!!

Imagine that you have been blind from birth but will have sight for three days. During those days you may visit a biome of your choice. What things would you like to see in that biome and why?

ECO-KIDS LESSON ACTIVITIES

Lesson Number 3 Extra Activity Number 3

BIOMES

Choose one or more partners and build a biome. Be creative and use as many different materials as you possibly can.

ECO-KID LESSON ACTIVITIES

Lesson Number 4 Extra Activity Number 1

PRIVATE PROPERTY

Make some rules for the use of a small forest, which you own.
This forest has a lake and a stream.

ECO-KID LESSON ACTIVITIES

Lesson Number 4 Extra Activity Number 2

BEFORE AND AFTER

Think of a forest area.
What did the area look like before the forest was there?
What will it look like in 200 years?

Illustrate each answer and write descriptions.

ECO-KID LESSON ACTIVITIES

Lesson Number 4 Extra Activity Number 3

Build a jungle terrarium. Make small paper mache animals to be placed in this jungle.

ECO-KID LESSON ACTIVITIES

Lesson Number 4 Extra Activity Number 4

Use coat hangers and make a mobile depicting any of the different forests.

ECO-KID LESSON ACTIVITIES

Lesson Number 4 Extra Activity Number 5

Make murals of the forests. Select teams to make the backgrounds and the animals.

ECO-KID LESSON ACTIVITIES

Lesson Number 5 Extra Activity Number 1

An animal from the deciduous forest is telling a child about his home and life in the forest. He also tells why he prefers living in this forest biome. Write the conversation that takes place between these two friends.

ECO-KID LESSON ACTIVITIES

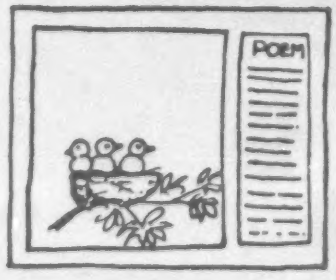
Lesson Number 5 Extra Activity Number 2

Divide the class into teams. Each team can make up a surprise box with some items made from wood and some made from other products. Trade boxes and devise games to see who can name the most correct "wood" items by only feeling the items.

ECO-KID LESSON ACTIVITIES

Lesson Number 5 Extra Activity Number 3

Bird's Nests and creative writing:
Each child gathers materials from wooded areas (dried grass, feathers, string, etc.) These are glued onto a bird nest made from brown construction paper. The nest is placed on a small branch and stapled onto a 9"x12" colored sheet of construction paper. Design baby birds out of cotton balls dipped into yellow or blue powder paint. Paste paper eyes and beaks onto the birds and place baby birds into the nest. Mount on large 12" x 18" paper, along with a creative poem, BABY BIRDS, which each child will compose.



ECO-KID LESSON ACTIVITIES

Lesson Number 5 Extra Activity Number 4

ASSESSORS

Make an inventory of wildlife in your community.
Which are native?
Are they changing?
What do you expect will happen to them ten years from now?
Report your findings to the class.

ECO-KID LESSON ACTIVITIES

Lesson Number 6 Extra Activity Number 1

RECYCLING

Start a student organized paper recycling program. Let this be an on-going activity for the year. Detailed directions are included in the enclosed lesson titled, "Recycling Paper."

ECO-KID LESSON ACTIVITIES

Lesson Number 6 Extra Activity Number 2

IMPACT

Find out who's who in conservation of forests.
Today In the past.

What have they done? What can you and your family do to help with conservation of forests? Report your findings to the class.

ECO-KID LESSON ACTIVITIES

Lesson Number 6 Extra Activity Number 3

HOT PLOT

Plot the life story of a forest fire.
What control was used?
What could have been done?

ECO-KID LESSON ACTIVITIES

Lesson Number 6 Extra Activity Number 4

CONSERVATION CONSERVATION

With friends, prepare a series of pictures showing various needs for forest conservation.

ECO-KID LESSON ACTIVITIES

Lesson Number 6 Extra Activity Number 5

REST IN PEACE

Write an obituary (death notice) for something in nature.

Some suggestions:

winter	an eagle
a forest	a stream
an insect	a deer

ECO-KID LESSON ACTIVITIES

Lesson Number 6 Extra Activity Number 6

ECOLOGISTS

Make a list of things that are harmful to plants and animals in the forest. You are an ecologist assigned the task of protecting the forests from these harmful things. Make a list of things you plan to do to save these plants and animals from being harmed.

ECO-KID LESSON ACTIVITIES

Lesson Number 7 Extra Activity Number 1

WASTE NOT - WANT NOT

Find a way to show five things that had their origin in the forest, but man is wasting them. Can you make one of the things something you can't see? Good thinking to you!!

ECO-KID LESSON ACTIVITIES

Lesson Number 7 Extra Activity Number 2

T-I-M-B-E-R

Show the uses of trees.
Clue: don't forget the leaves and bark

ECO-KID LESSON ACTIVITIES

Lesson Number 7 Extra Activity Number 3

TREE MAP

Locate and plot on an area map all the trees of a specific type. Is there a pattern to be seen?

ECO-KID LESSON ACTIVITIES

Lesson Number 7 Extra Activity Number 4

TOMORROW?

Look for signs of man building up and tearing down his earth. Write a story: "How to Survive in Our World".

ECO-KID LESSON ACTIVITIES

Lesson Number 7 Extra Activity Number 5

CRYSTAL BALL

Develop a description of yourself 20 years from now. Where are you going? What are you doing?

ECO-KID LESSON ACTIVITIES

Lesson Number 8 Extra Activity Number 1

Write an imaginative story on, "Life in a Tree", "Eco-Kids Save a ? ", "How I Live Under a Rock", "How it Feels to be an Ant in the Forest", etc.

ECO-KID LESSON ACTIVITIES

Lesson Number 8 Extra Activity Number 2

Describe what you want your environment to be like in 10, 20 or 50 years. Illustrate it, too.

ECO-KID LESSON ACTIVITIES

Lesson Number 8 Extra Activity Number 3

Go out and find these objects. Look at them, feel, smell and listen to them. Then put them on our science table for someone else to observe. Now write a description of as many as you wish.

A flower
This year's deciduous leaf
Last year's deciduous leaf
Needles from a coniferous tree
A piece of bark
Wet soil
Dry, sandy soil
A pine cone

ECO-KID LESSON ACTIVITIES

Lesson Number 8 Extra Activity Number 4

OUT OF FORESTS

Project what your life would be like if all forests were eliminated permanently.

Bell Pak

NAME _____
GRADE _____
TEACHER _____

Directions

Put your name, grade, and teacher's name at the top of the page. For each of the questions below, circle the answer you think is best.

1. What is our environment?

   a) all plants and trees around us

   b) everything around us

   c) all man made things around us

   d) all animals around us

2. Which of the following is an example of a biome?

   a) aquarium

   b) classroom

   c) zoo cage

   d) non-polluting car

3. Ecology is the study of

   a) how plants live

   b) how animals and man live

   c) how plants and animals interact to live

4. If many trees in this city were cut down, the amount of oxygen for people to breathe would

   a) increase

   b) decrease

   c) stay the same

5. What would be a way to save trees?

   a) use cloth napkins

   b) use paper plates

   c) use plastic forks

   d) buy milk in cartons, not bottles

6. Which of these things was not made from a tree?

   a) a cardboard box

   b) a cotton towel

   c) a birthday card

   d) a paper napkin

7. The soil in a coniferous forest is

   a) salty

   b) acid

   c) alkaline

   d) putrid

8. Hard wood comes from

   a) coniferous trees

   b) deciduous trees

   c) fir

   d) pine trees

9. During what season is the forest floor warmest?

   a) mid-summer

   b) early spring and fall

   c) late spring and summer

   d) summer and early fall

10. Which plant is part of the forest canopy?

   a) a cattail

   b) a blackberry vine

   c) an oak tree

   d) a mushroom

11. What should we do with natural forest litter?

   a) rake it up

   b) plow it under the soil

   c) burn it

   d) leave it alone

12. In what kind of forest would you find dead leaves on the ground in late autumn?

    a) coniferous forest

    b) deciduous forest

    c) jungle

    d) all of these

13. If an animal is native to a certain area, the animal

    a) was brought to the area by man

    b) was not brought to the area by man

    c) has been domesticated by man

    d) has not been domesticated by man

14. The mink helps the balance of nature most by

    a) eating harmful insects and amphibians

    b) providing warm coats for man

    c) loosening the earth by digging tunnels

    d) eating sick or disabled animals

15. Where do very young mammals get their food?

    a) they eat insect larva

    b) they eat tender young plants

    c) they get their food from their mothers

    d) they eat birds' eggs and fish

16. Which of these insects is most helpful to man?

    a) dragon fly

    b) mosquito

    c) gnat

17. Suppose we have collected a whole wastebasket full of paper. How many ways can you think of to reuse some of the paper? List them below.

18. Why do you think it is important to conserve trees? Make a list of as many reasons below.

19. For each object below make a list of as many things you can think of to do with it besides throw it away.

Lunch sack

Cardboard shoe box

Paper plate

Milk carton

Sunday newspaper